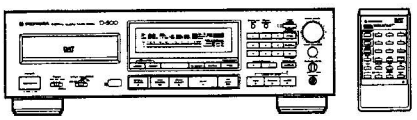
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
ARP2336

DIGITAL AUDIO TAPE DECK

D-500

- **This manual is applicable to the D – 500/HEM type.**
- **As to the circuit description, refer to the D – 500 service guide (ARP2338).**
- **Ce manuel pour le service comprend les explications de réglage en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

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1. EXPLODED VIEWS, PACKING AND PARTS LIST

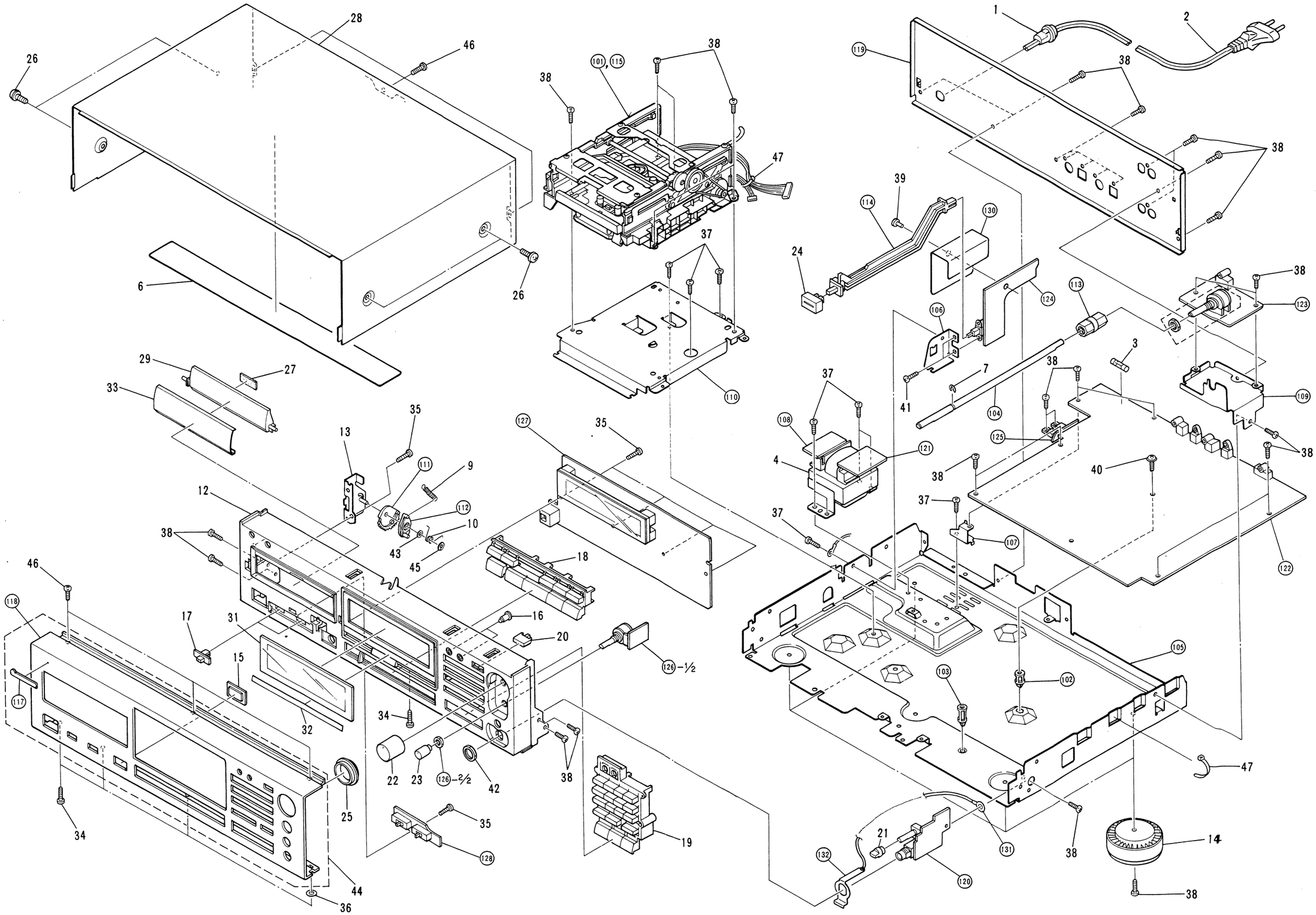
NOTES:

- *The parts with an encircled number are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

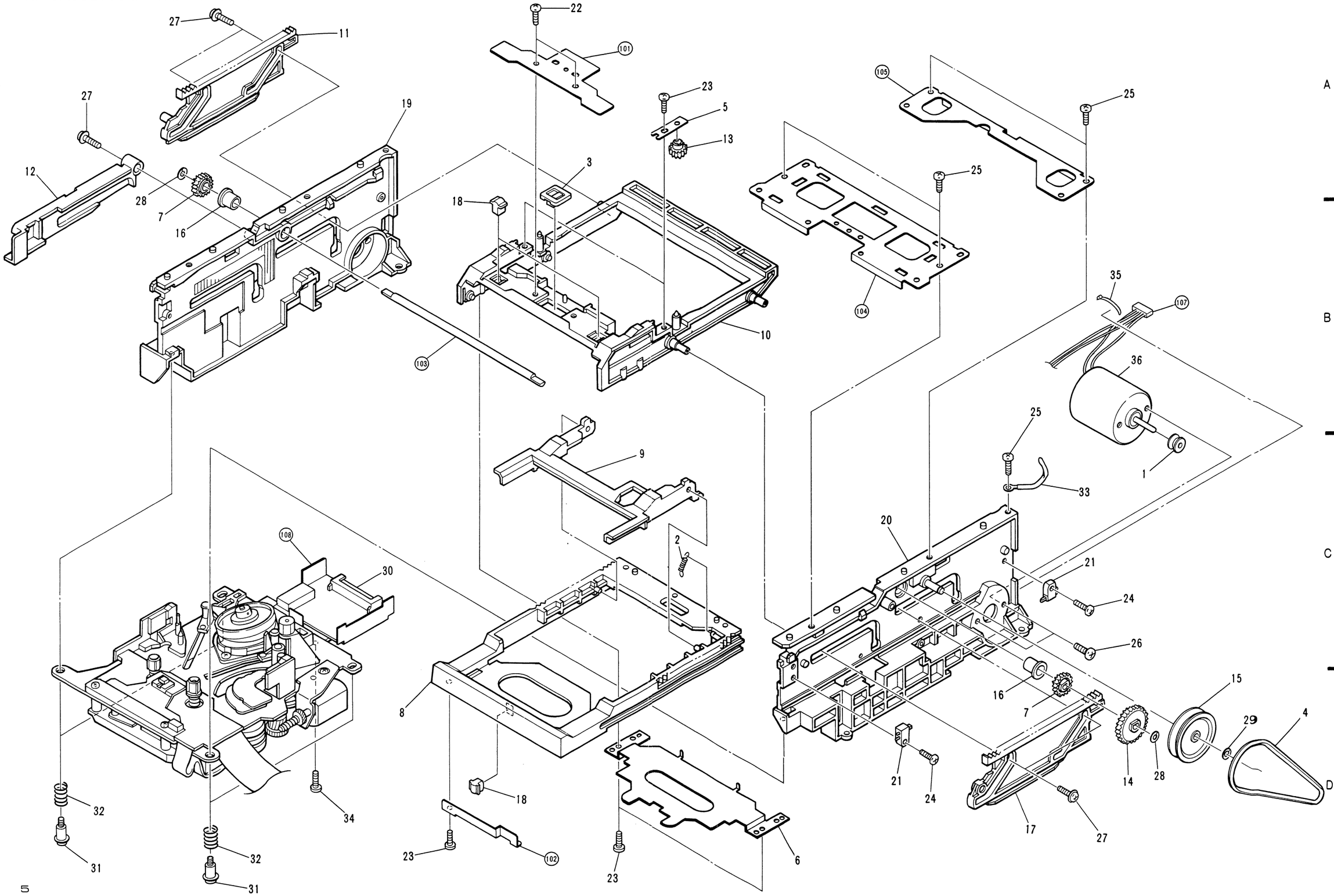
1.1 EXTERIOR

Parts list of Exterior

Mark	No.	Description	Parts No.
⚠	1	Strain relief	CM−22B
⚠	2	AC Power cord	PDG1003
⚠	3	Fuse (2.5A, FU1)	REK−104
⚠	4	Power transformer	RTT1177
	5	.....	
	6	Damper plate B	PNB1109
	7	Washer	RBF1019
	8	.....	
	9	Arm spring	RBH1143
	10	Gear spring	RBH1191
	11	.....	
	12	Panel stay	RNT1115
	13	Door bracket assembly	RXA1383
	14	Leg assembly	AMR1159
	15	Sensor window	PNW1075
	16	Counter reset knob	RAA1009
	17	Slide SW knob	RAC1562
	18	Function knob A	RAC1622
	19	Function knob B	RAC1623
	20	Push knob	RAC1621
	21	Headphone knob	RAC1620
	22	VR knob A	RAC1430
	23	VR knob B	RAC1421
	24	Power button	PNW1580
	25	VR escutcheon	RAT1009
	26	Screw	FBT40P080FZK
	27	Door stabilizer	REB1122
	28	Bonnet	RNA1463
	29	Door mold	RNK1737
	30	.....	
	31	Display panel	RAH1743
	32	Function panel	RAH1900
	33	Door panel	RAH1901
	34	Screw	BBT30P100FZK
	35	Screw	BBZ26P080FZK
	36	Washer A	REC1111
	37	Screw	BBZ30P060FCC
	38	Screw	BBZ30P080FCC
	39	Rivet	VEC−143
	40	Screw	IBZ30P150FCU
	41	Screw	BMZ30P040FCU
	42	Nut	RBN−006
	43	Washer	WT21D050D050
	44	Front panel assembly	RXX1432
	45	Washer	WT21D070D050
	46	Screw	BBT30P080FCC
	47	Binder	REC−371
	101	DAT Mechanical unit	EXK2502
	102	PCB spacer	PNY−404
	103	PCB holder	REC1036
	104	VR shaft	RLA1161
	105	Main chassis	RNB1053
	106	AC−SW holder	RNE1176
	107	PCB holder	RNE1330
	108	Trans A PCB	
	109	VR shield plate	RNE1418
	110	Mecha stay	RNE1419
	111	Gear	RNK1289
	112	Arm	RNK1290
	113	Joint	RNK1333
	114	AC−SW joint	RNK1677
	115	Cassette installation unit	RXA1355
	116	.....	
	117	Name plate	PAN1035
	118	Front panel	RAH1899
	119	Rear panel	RNA1464
	120	Headphone unit	RWZ2443
	121	Trans B unit	RWZ2444
	122	Main unit	RWZ2445
	123	Master VR unit	RWZ2446
⚠	124	ACSW unit	RWZ2447
	125	IC unit	RWZ2448
	126	Balance VR unit	RWZ2449
	127	Operation/Display unit	RWZ1945
	128	Timer switch unit	RWZ1946
	129	Capacitor sleeve A	REC−150
	130	AC−SW Cover	REC1107
	131	Earth lead ass'y	RDF1108
	132	Earth plate	PNE1481


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1.2 CASSETTE INSTALLATION UNIT



Parts list of Cassette Installation Unit

Mark	No.	Description	Parts No.
	1	Motor pulley	PNW1634
	2	Spring	RBH1279
	3	Half damper	REB1033
	4	Belt	REB1140
	5	Gear stopper	RNE1394
	6	Container plate	RNE1395
	7	Gear	RNK1272
	8	Tray	RNK1648
	9	Flap	RNK1649
	10	Container	RNK1650
	11	Main rack plate L	RNK1653
	12	Lever	RNK1657
	13	Gear	RNK1658
	14	Gear A	RNK1659
	15	Pulley gear	RNK1660
	16	Collar	RNK1661
	17	Main rack plate R	RNK1664
	18	Half set	RNK1711
	19	Side plate L assembly	RXA1356
	20	Side plate R assembly	RXA1357
	21	Push switch (S2001, 2002)	RSF1008
	22	Screw	BBZ20P040FMC
	23	Screw	BBZ20P060FZK
	24	Screw	BBZ20P080FMC
	25	Screw	BBZ26P060FMC
	26	Screw	BMZ30P040FMC
	27	Screw	PBA1035
	28	Washer	WT21D050D025
	29	Washer	WT26D047D050
◉	30	RF unit	RWX1040
	31	Screw	PBA1002
	32	Spring	RBH1125
	33	Clamper	RNH−184
	34	Screw	BMZ20P040FMC
	35	Binder	REC−371
	36	Loading motor	VXM1034

Mark	No.	Description	Parts No.
	101	Half set spring	RBK1035
	102	Tray spring	RBK1036
	103	Shaft	RLA1152
	104	Top plate	RNE1396
	105	Rear stay	RNE1397
	106	.....	
	107	Connector assembly (6P)	RKP1433
	108	Lower shield case	RNE1401

1.3 DAT MECHANICAL UNIT

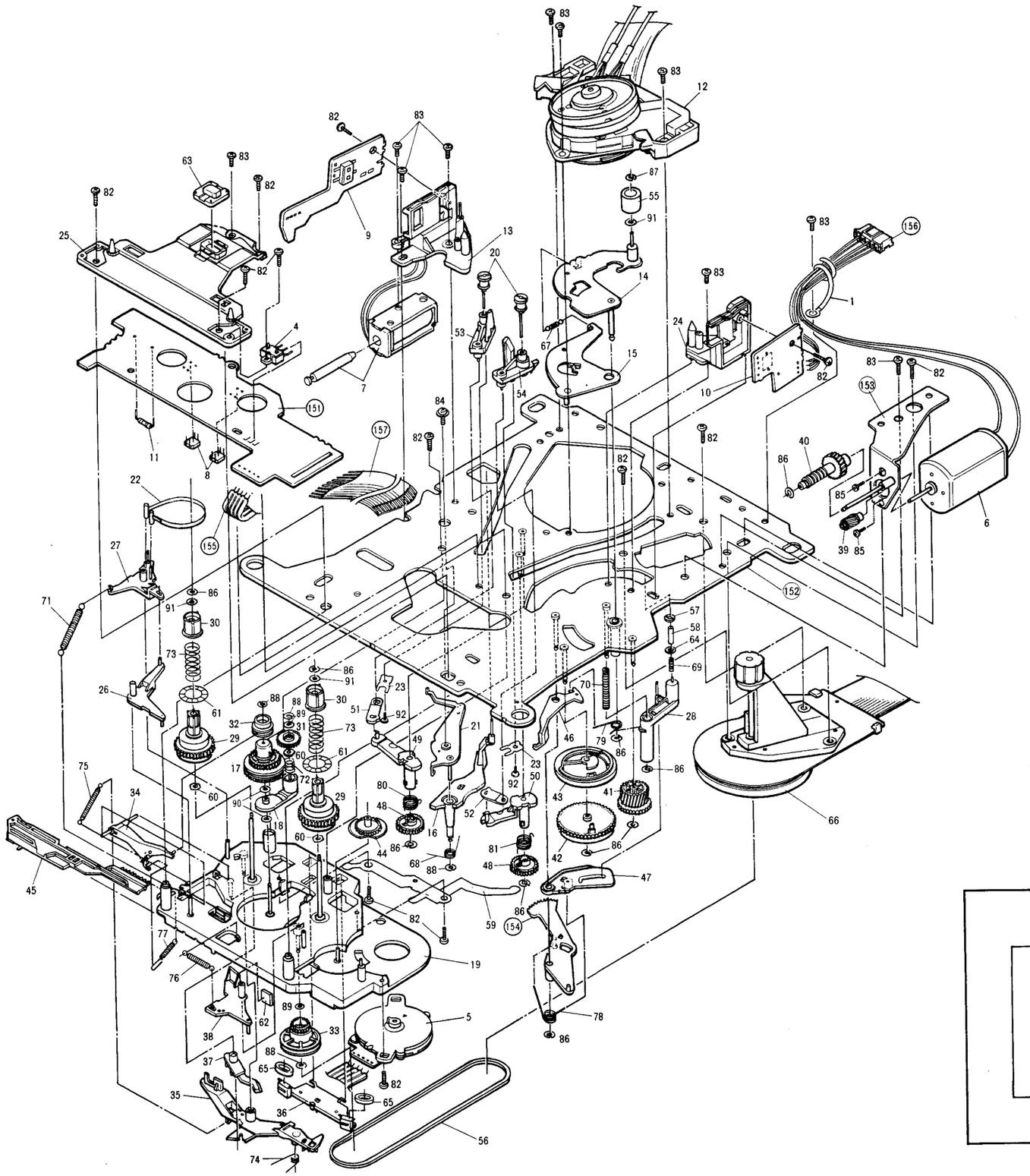
Parts list of DAT Mechanism Unit

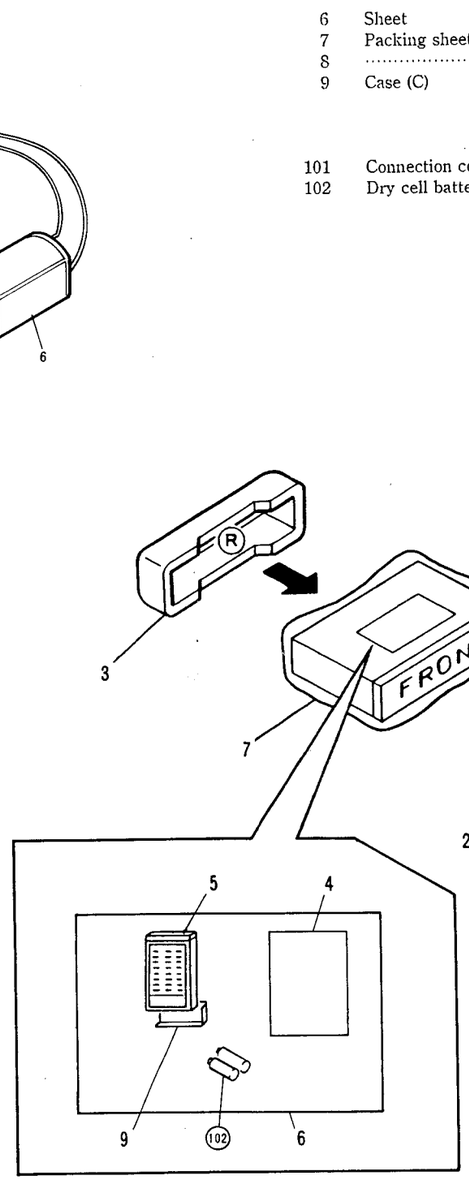
Mark	No.	Description	Parts No.
	1	Clamper	HEF−102
	2	.....	
	3	.....	
	4	Switch (S101)	ESG1001
	5	Encoder	ESX1001
	6	Motor	CXM1020
	7	Solenoid	EXP1007
	8	Photo reflector (Q101,Q102)	GP2S04
	9	Photo reflector assembly	EXX1023
	10	Photo reflector assembly	EXX1022
	11	Resistor (R101)	RD1/4PM431J
	12	Drum assembly	EXH9003
	13	Bracket assembly	EXA1117
	14	Arm assembly	EXA1118
	15	Arm assembly	EXA1119
	16	Arm assembly	EXA1122
	17	Gear assembly	EXA1123
	18	Arm assembly	EXA1124
	19	Reel base assembly	EXA1125
	20	Tape guide	EXA1129
	21	Bracket assembly	EXA1184
	22	Band assembly	EXA1185
	23	Plate	ENE1006
	24	Bracket	ENV1236
	25	Stabilizer	ENV1192
	26	Lever	ENV1194
	27	Brake	ENV1195
	28	Arm	ENV1197
	29	Gear	ENV1251
	30	Hub	ENV1252
	31	Gear	ENV1253
	32	Wheel	ENV1254
	33	Gear	ENV1255
	34	Arm	ENV1256
	35	Lever	ENV1257
	36	Plate	ENV1258
	37	Lever	ENV1259
	38	Brake	ENV1260
	39	Gear	ENV1231
	40	Gear	ENV1232
	41	Wheel	ENV1233
	42	Gear	ENV1234
	43	Cam	ENV1235
	44	Gear	ENV1238
	45	Plate	ENV1239
	46	Brake	ENV1240
	47	Arm	ENV1241
	48	Gear	ENV1242
	49	Arm	ENV1243
	50	Arm	ENV1244
	51	Link	ENV1245
	52	Link	ENV1246
	53	Slider	ENV1247
	54	Slider	ENV1248
	55	Pinch roller	ENT1016
	56	Belt	ENT1017
	57	Tape guide	ELA2025
	58	Tape guide	ELA2022
	59	Earth spring	EBL1004
	60	Washer	EBF1014
	61	Sheet	EEF1001
	62	Felt	ENM1019
	63	Damper	ENT1021
	64	Tape guide	ENV1282
	65	Brake shou	ENT1022
	66	Motor unit	EXH9002
	67	Spring	EBH1236
	68	Spring	EBH1237
	69	Spring	EBH1222
	70	Spring	EBH1223
	71	Spring	EBH1224
	72	Spring	EBH1226
	73	Spring	EBH1227
	74	Spring	EBH1228
	75	Spring	EBH1229
	76	Spring	EBH1230
	77	Spring	EBH1231
	78	Spring	EBH1232
	79	Spring	EBH1233
	80	Spring	EBH1238
	81	Spring	EBH1239
	82	Screw	BBZ20P060FZK
	83	Screw	BMZ20P040FMC
	84	Screw	PMS20P025FMC
	85	Screw	JGZ20P030FMC
	86	Washer	WT16D040D050
	87	Washer	WT16D032D025
	88	Washer	WT10D035D025
	89	Washer	WA16D032D025
	90	Washer	WA16D032D013
	91	Washer	WA20D040D050
	92	Screw	EBA1025
	151	Reel sensor unit	ENP1027
	152	Chassis assembly	EXA1183
	153	Bracket assembly	EXA1130
	154	Lever	ENR1014
	155	Cable	EDD1004
	156	Connector	EDE1011
	157	Cable	EDD1006

1.4 PACKING

Parts list of Packing

Mark	No.	Description	Parts No.
	1	Packing case	RHG1299
	2	Pad (F)	RHA1033
	3	Pad (R)	RHA1034
	4	Operating instructions (English, French, German, Italian)	RRE1048
		Operating instructions (Dutch, Swedish, Spanish, Portugues)	RRD1117
	5	Remote control unit (CU-D003)	RPX1022
	6	Sheet	RHL1001
	7	Packing sheet	RHX-034
	8	.....	
	9	Case (C)	VNK1598
	101	Connection cord assembly	RDE1002
	102	Dry cell battery (R03)	VEM-022





2. REMOVING THE DAT MECHANICAL UNIT

1. Remove the bonnet cover.
2. Disconnect the flexible PCB from connectors CN03 to CN05 and the connectors from connectors CN06, CN07, and J2.
   Remove the wire from the transformer by loosening the cord clamp.
3. Remove five screws ① to remove the loading mechanical section. (See Fig. 2-1.)
4. Disconnect connector CN402 from the RF unit, and remove the two flexible PCBs and one wire of the connector from section A.
5. Remove four screws ② and four mechanical mounting springs to remove the DAT mechanical unit. (See Fig. 2-2.)

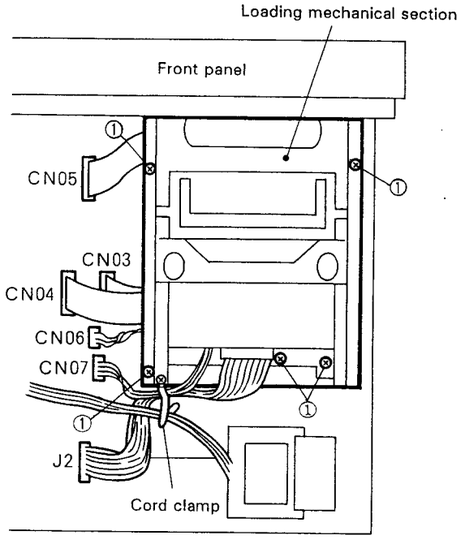


Fig. 2-1

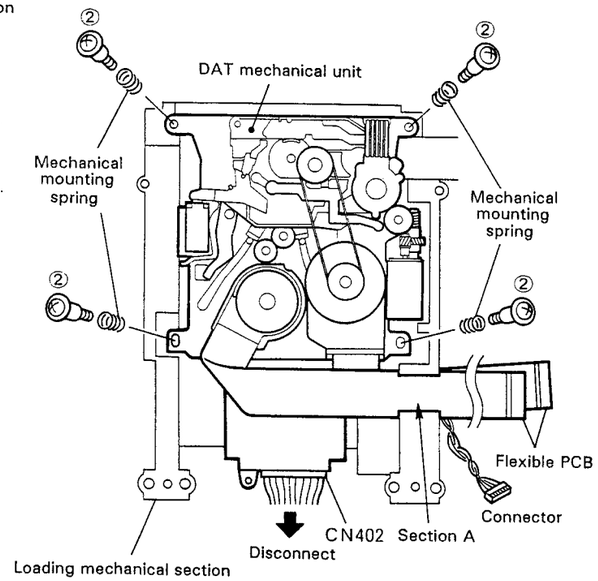


Fig. 2-2

3. REPLACING MAIN PARTS IN THE MECHANICAL SECTION

3.1 REPLACING THE DRUM

<Removing>

1. Cut the wire clamp and disconnect connector CN401.
2. Remove three screws ① to remove the rotating drum assembly.

Note :
Do not touch the outer surface of the drum.

<Re-installing>

1. Use the removal procedure in the reverse sequence. However, be sure to tighten three screws ① counterclockwise starting from position Ⓐ with torque of 1kgcm as shown in Fig. 3-1.

Note :
After replacement, be sure to perform the tape pass adjustment, TACH adjustment, and record current adjustment.

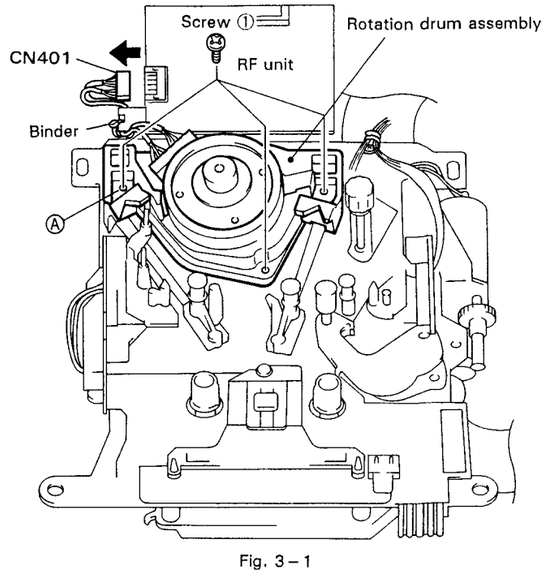


Fig. 3-1

3.2 REPLACING THE CAPSTAN DD MOTOR UNIT

<Removing>

1. Remove rubber belt ①.
2. Remove three screws ② to remove the capstan DD motor unit.

<Re-installing>

1. Use the removal procedure in the reverse sequence.

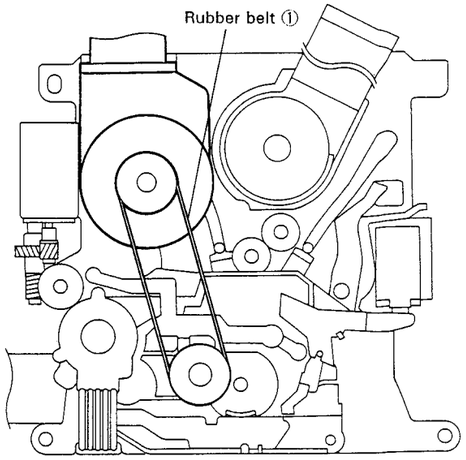


Fig. 3-2

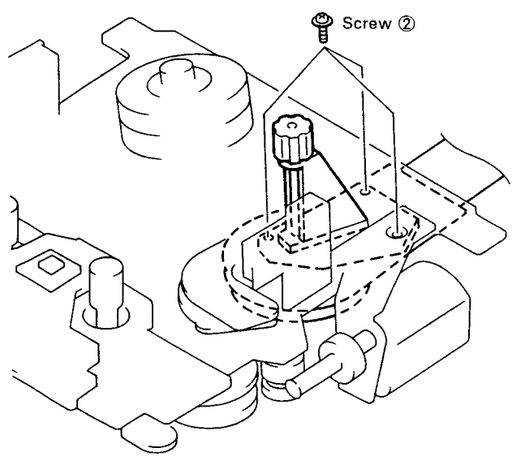


Fig. 3-3

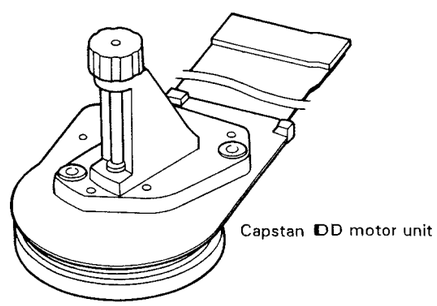
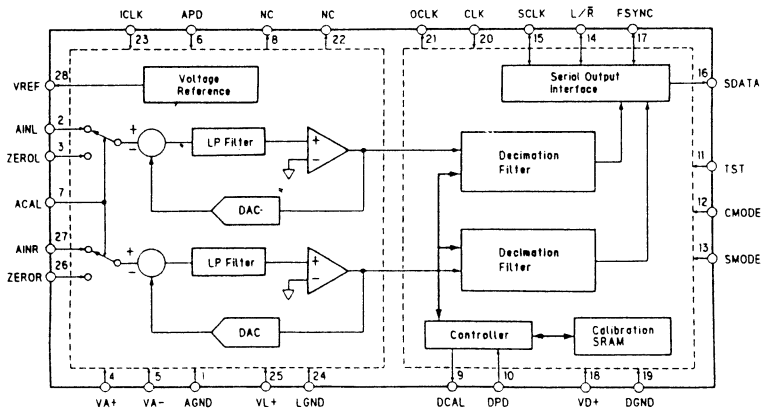


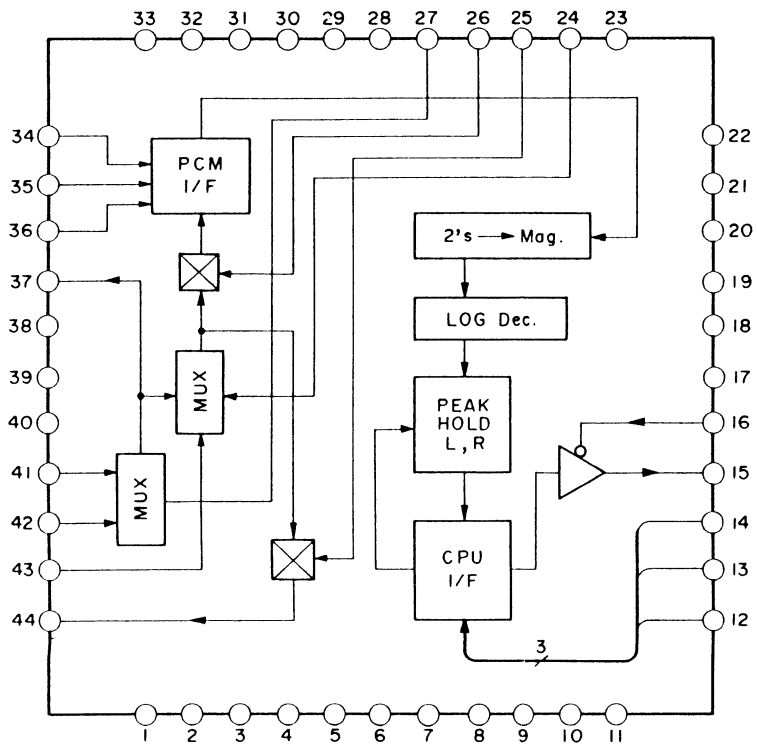
Fig. 3-4

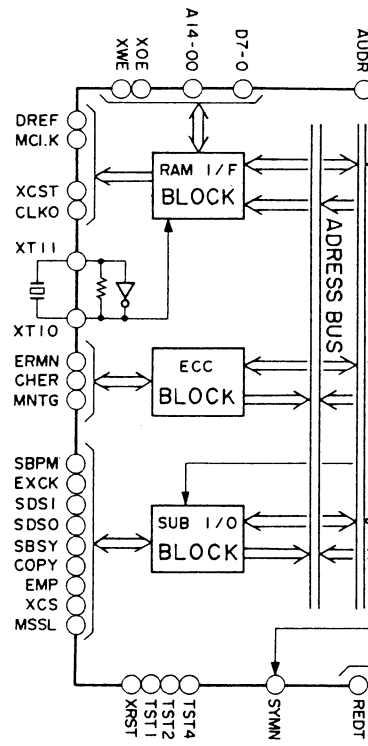
● IC Block Diagram

IC903 (CS5339)



IC513 (PD2020)





3.3 REPLACING THE PINCH ROLLER

<Removing>

1. Remove the poly – slider washer at the upper section of the pinch roller using the edge of a precision screwdriver.

Note :
Care must be taken to prevent deforming the pinch arm assembly.

<Re – installing>

1. Insert the pinch roller on the pinch arm assembly and press – fit the poly – slider washer to the pinch roller.

Note :
Pay attention to prevent dust (especially, magnetic powder) from adhering to the pinch roller. Use a new poly – slider washer after replacing the pinch roller.

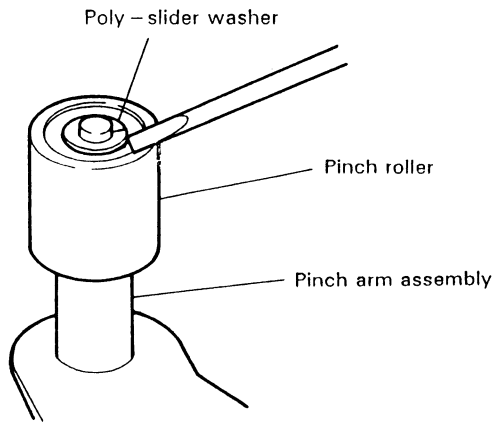


Fig. 3 – 5

3.4 REPLACING THE POWER MOTOR

<Removing>

1. Loosen the clamp to remove the wiring.
2. Remove one screw ① to remove the motor bracket from the chassis.
3. Remove poly – slider washer ② using a screwdriver and extract the worm gear.
4. Remove two screws ③ to remove the power motor.

<Re – installing>

1. Use the removal procedure in the reverse sequence.

Note :
After replacing the motor, be sure to press – fit a new motor gear. Do not change the clamp screw direction.

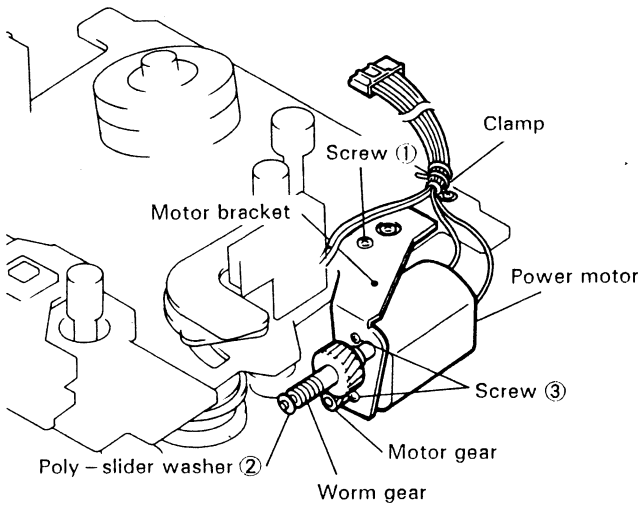


Fig. 3 – 6

3.5 REPLACING THE PLUNGER SOLENOID

<Removing>

1. Melt and remove solder Ⓐ connecting the end sensor PCB and reel PCB.
2. Remove one screw ① to remove the end sensor PCB. Melt and remove the solder connecting the solenoid lead wire to the end sensor PCB, and remove the wire from the end sensor PCB.
3. Remove two screws ② to remove the plunger solenoid.

<Re – installing>

1. Use the removal procedure in the reverse sequence.

Note :
After re – installation, press – fit the solenoid to the hook section of the end sensor bracket.

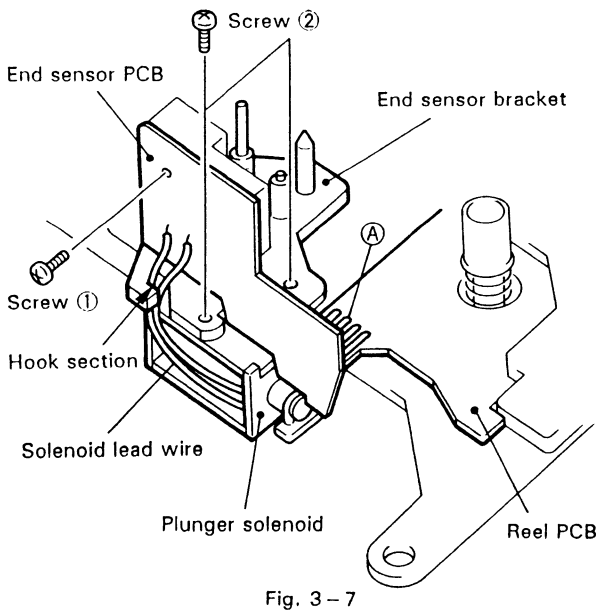


Fig. 3 – 7

3.6 REMOVING/RE-INSTALLING THE RE

<Removing>

1. Set the mode to unthreading.
2. Remove the rubber belt.
3. Remove one screw ① fixing the encoder.
4. Remove four screws ② to remove the reel b assembly.

<Re – installing>

1. Use the removal procedure in the reverse sequence.

Notes :
- *When re-installing the reel base assembly in the chas move the mode plate to the leftmost side viewed from rear side.*
- *When re-installing the encoder, match the convex of encoder shaft to the concave. (See page 15.)*

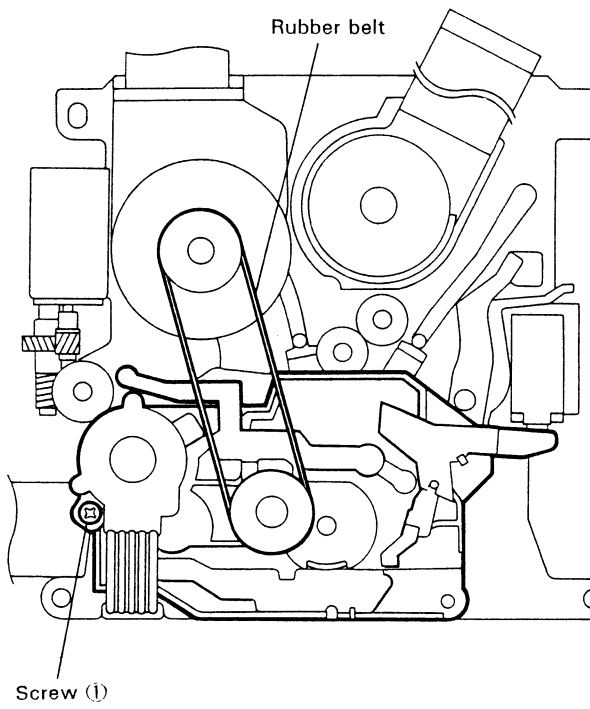
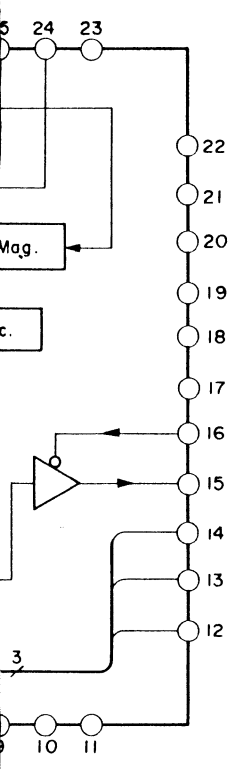
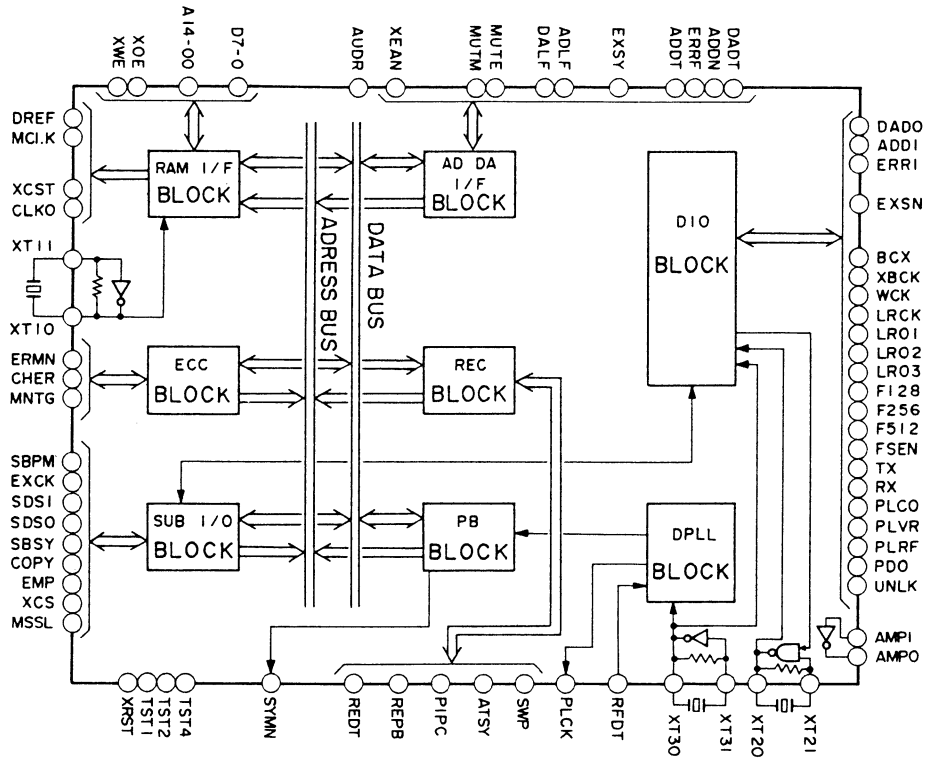


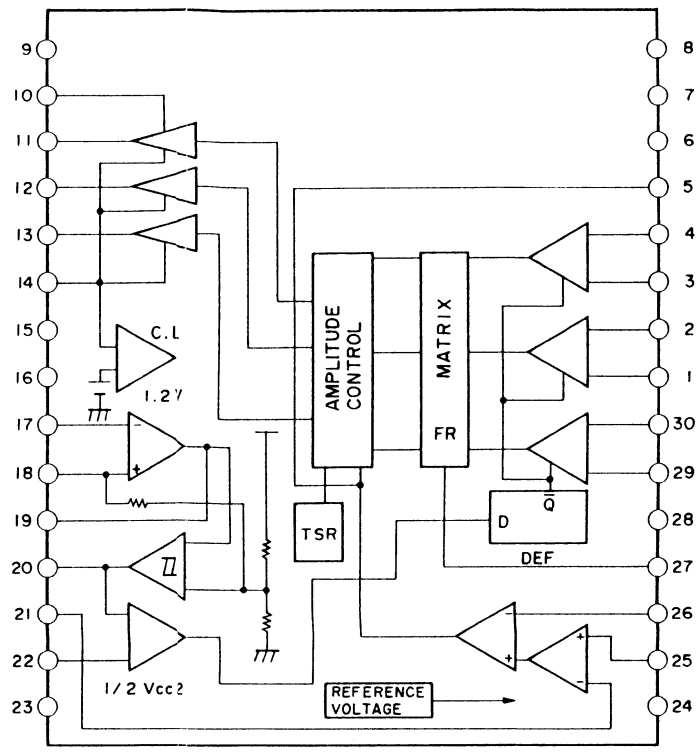
Fig. 3 – 8

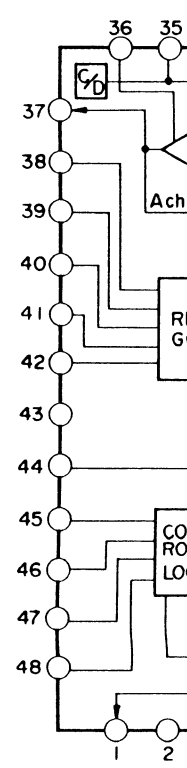


IC501 (CXD2601AQ)



IC506, IC507 (LB1687)





3.6 REMOVING/RE-INSTALLING THE REEL BASE ASSEMBLY

<Removing>

1. Set the mode to unthreading.
2. Remove the rubber belt.
3. Remove one screw ① fixing the encoder.
4. Remove four screws ② to remove the reel base assembly.

<Re – installing>

1. Use the removal procedure in the reverse sequence.

Notes :

- *When re-installing the reel base assembly in the chassis, move the mode plate to the leftmost side viewed from the rear side.*
- *When re-installing the encoder, match the convex of the encoder shaft to the concave. (See page 15.)*

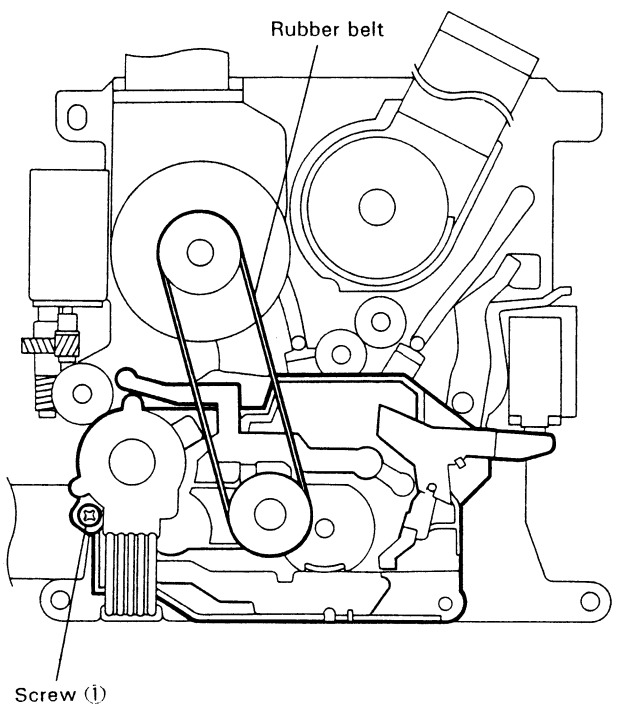


Fig. 3 – 8

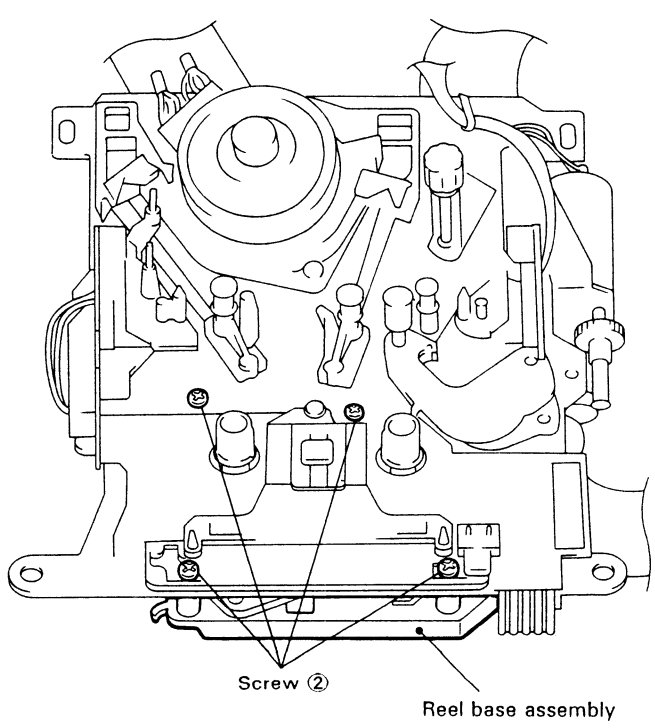


Fig. 3 – 9

3.7 ALIGNING THE GEARS

1. Align the gears with care using the mark position on each gear.

Note :
Set the unthreading mode before gear alignment.

Aligning the Interval Gear

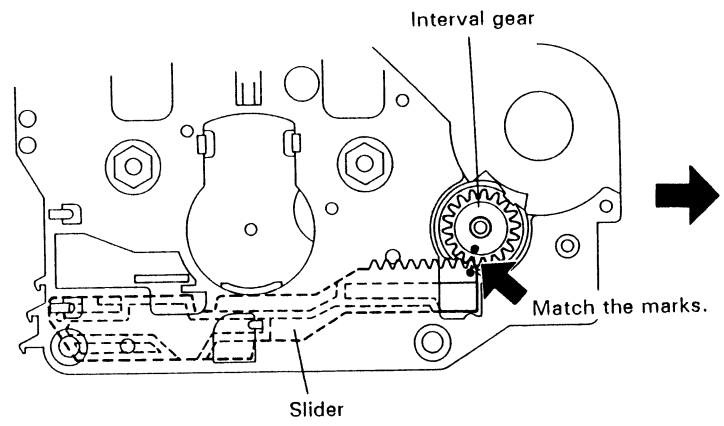


Fig. 3 – 11

3.8 NOTE

When tightening the switch screw, care must be taken to prevent giving torque exceeding 1 kg • cm.

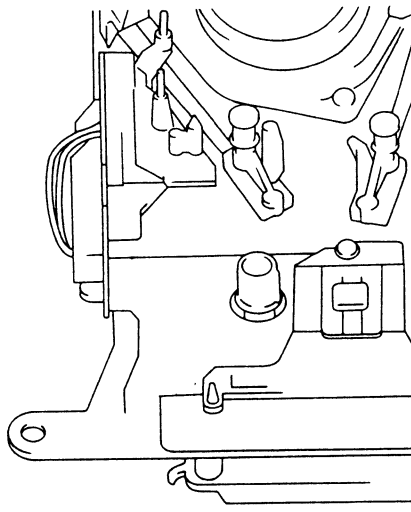
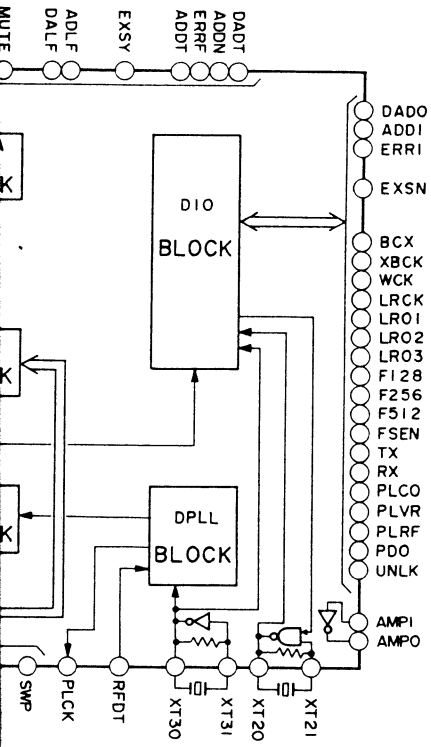
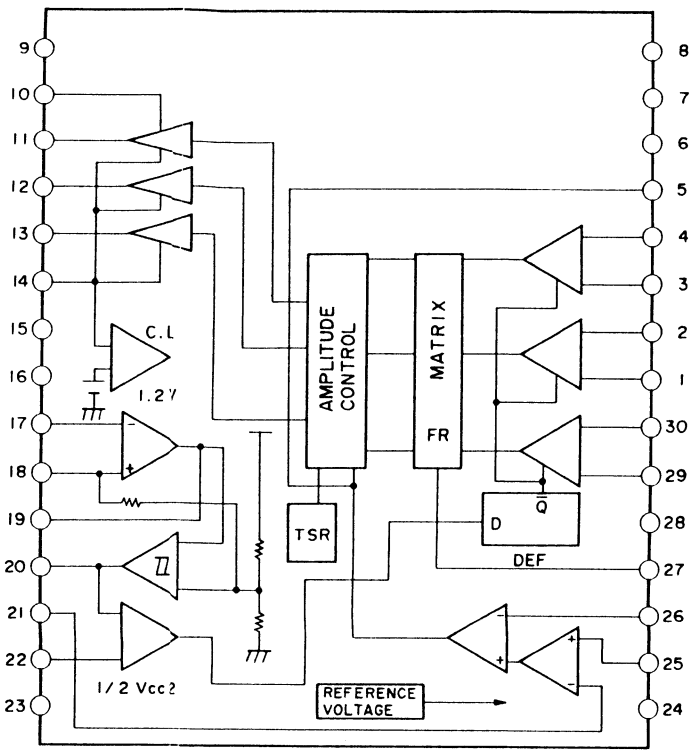


Fig. 3 – 12

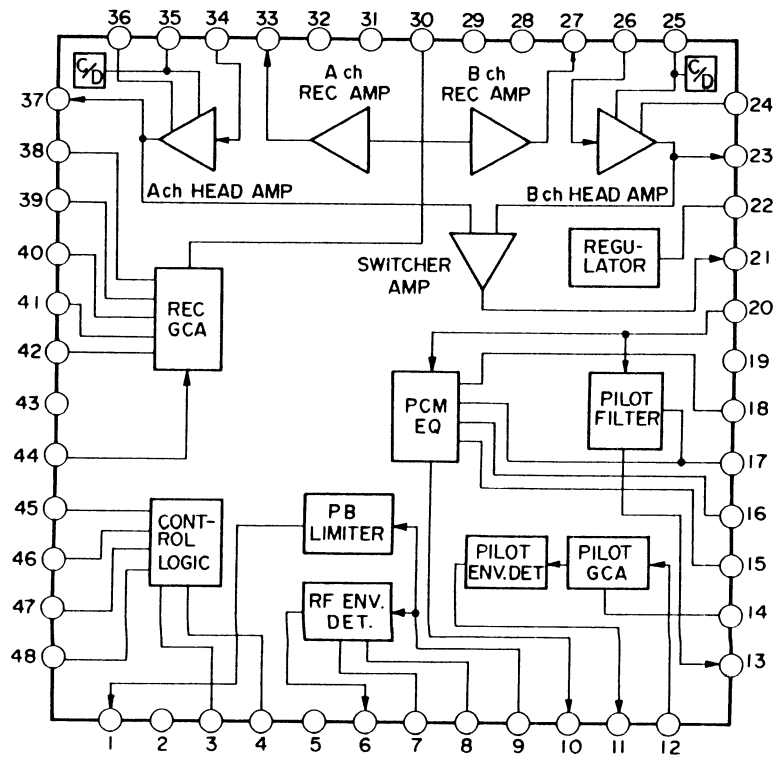
D2601AQ)



IC506, IC507 (LB1687)



IC201 (CXA1364R)



ASSEMBLY

3.7 ALIGNING THE GEARS

1. Align the gears with care using the mark position on each gear.

Note :
Set the unthreading mode before gear alignment.

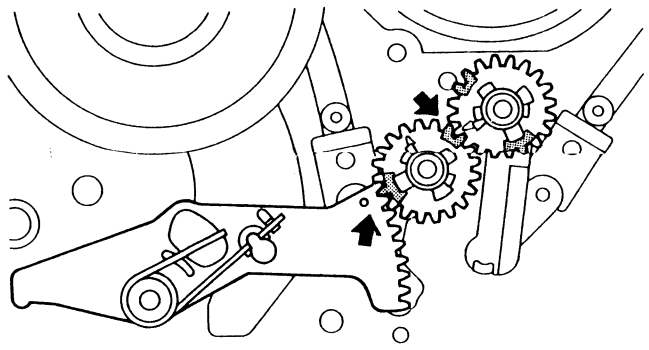
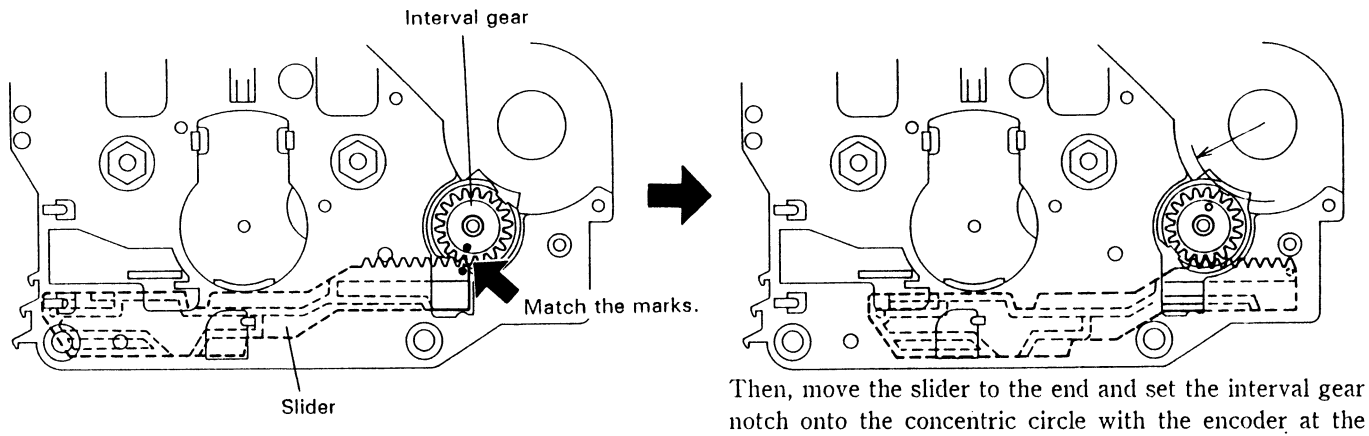


Fig. 3 – 10

Aligning the Interval Gear



Then, move the slider to the end and set the interval gear notch onto the concentric circle with the encoder at the center.

Fig. 3 – 11

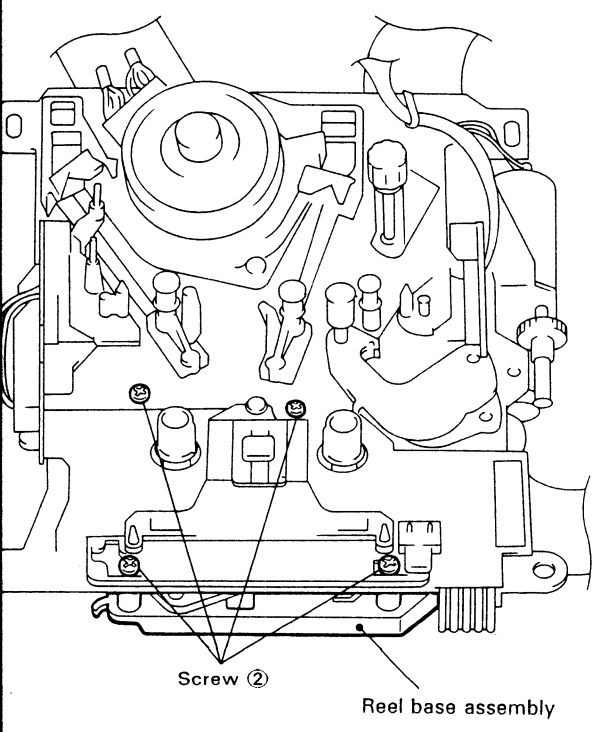


Fig. 3 – 9

3.8 NOTE

When tightening the switch screw, care must be taken to prevent giving torque exceeding 1 kg • cm.

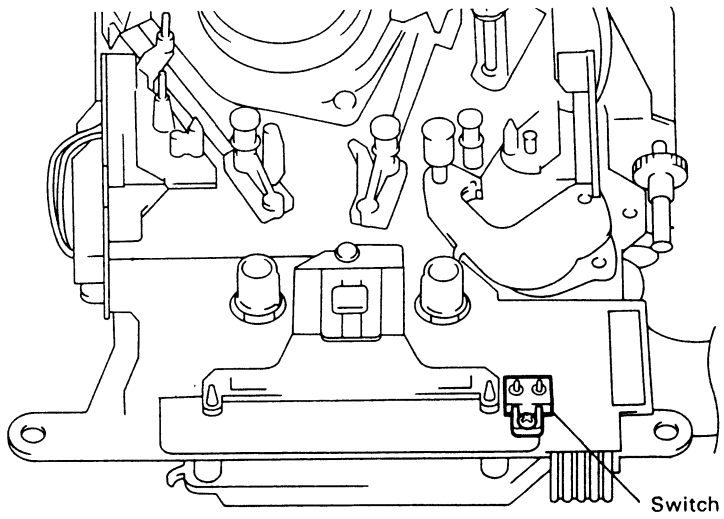
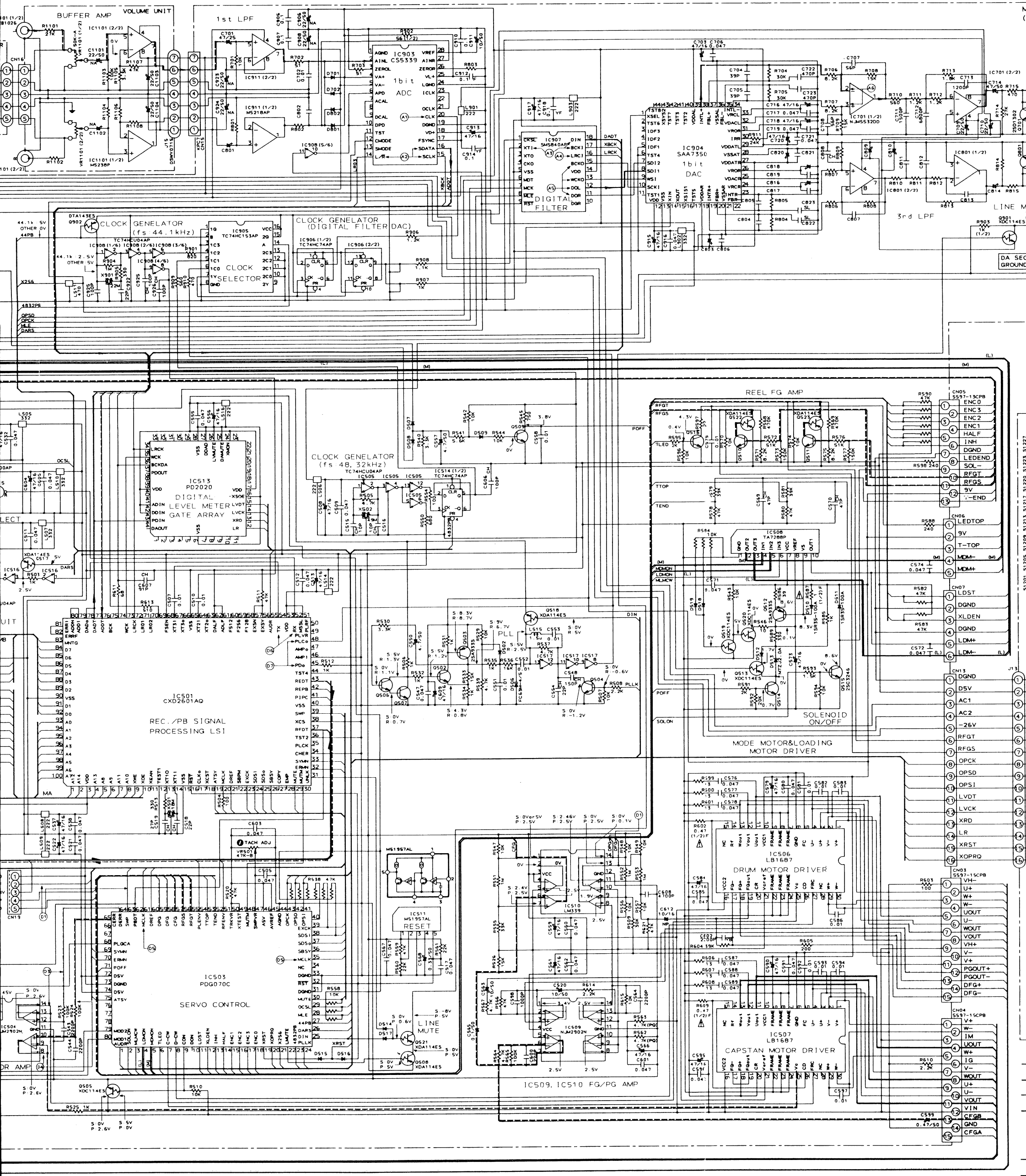
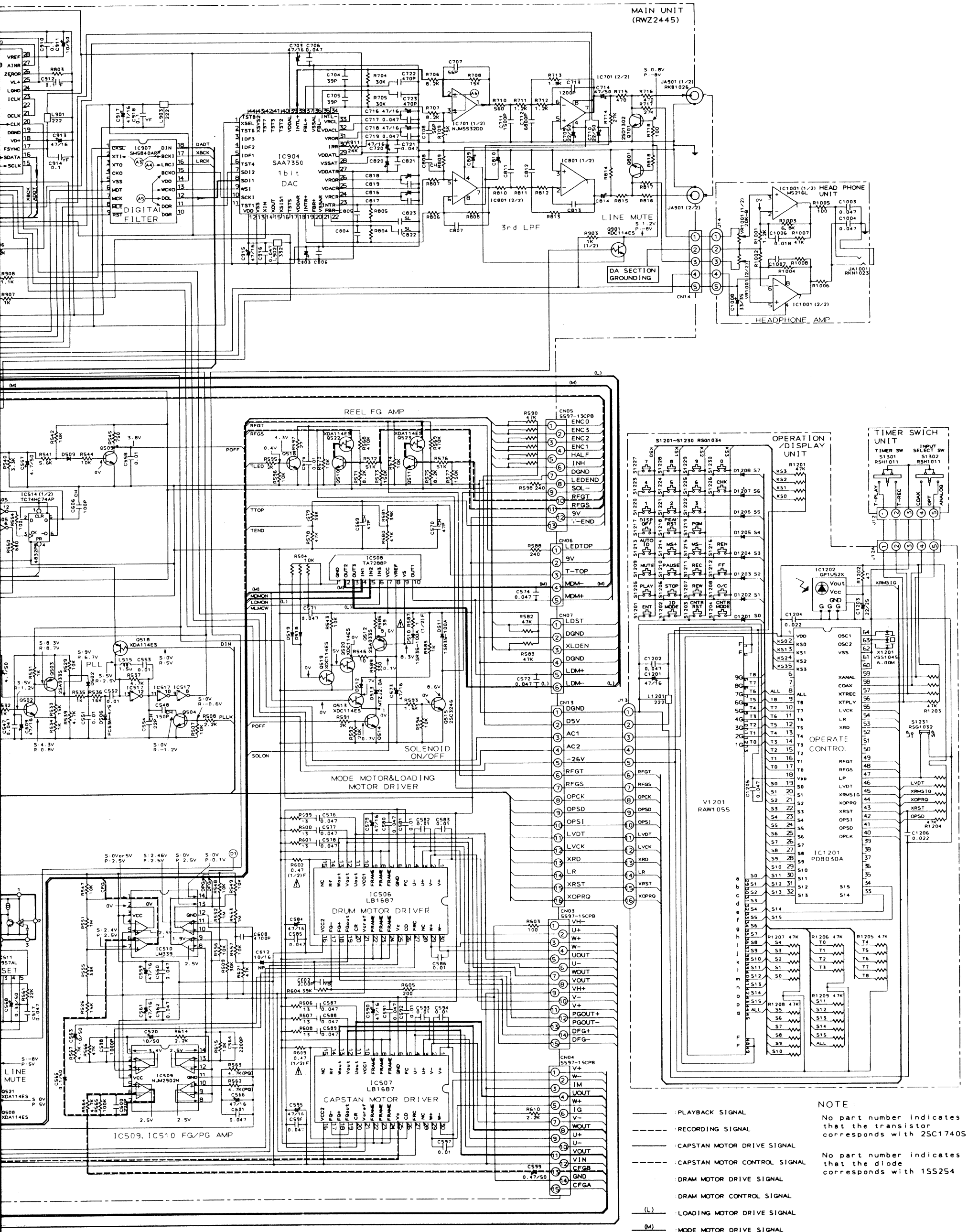


Fig. 3 – 12

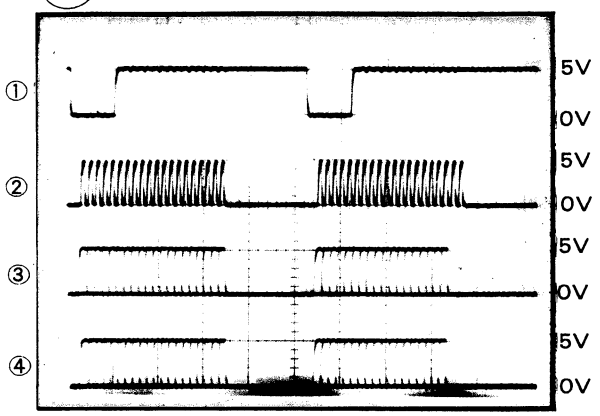
4. SCHEMATIC DIAGRAM AND P.C.BOARDS CONNECTION DIAGRAM

AGRAM


BUFFER AMP
VOLUME UNIT
1st LPF
IC903 CS5339
1bit ADC
IC904 SAA7350
1bit DAC
IC907 SM5840AP
DIGITAL FILTER
IC701 (1/2) NJM5532DD
3rd LPF
LINE M
CLOCK GENELATOR (fs 44.1kHz)
IC905 TC74HC153AP
CLOCK SELECTOR
CLOCK GENELATOR (DIGITAL FILTER DAC)
IC906 (1/2) TC74HC74AP
IC906 (2/2)
IC513 PD2020
DIGITAL LEVEL METER GATE ARRAY
CLOCK GENELATOR (fs 48, 32kHz)
IC514 (1/2) TC74HC74AP
REEL FG AMP
IC508 TA7288P
IC501 CXD2601AQ
REC./PB SIGNAL PROCESSING LSI
IC503 PDG070C
SERVO CONTROL
IC511 MS1957AL
RESET
LINE MUTE
SOLENOID ON/OFF
MODE MOTOR&LOADING MOTOR DRIVER
IC506 LB1687
DRUM MOTOR DRIVER
IC507 LB1687
CAPSTAN MOTOR DRIVER
IC509, IC510 FG/PG AMP
IC510 LM339
IC509 NJM2902N
TACH ADJ
CN05 5597-13CPB
CN06
CN07
CN13
CN03 5597-15CPB
CN04 5597-15CPB
ENC0
ENC3
ENC2
ENC1
HALF
INH
DGND
LEDEND
SOL-
RFGT
RFGS
9V
T-END
LEDTOP
T-TOP
MDM-
MDM+
LDST
XLDEN
LDM+
LDM-
D5V
AC1
AC2
-26V
OPCK
OPSD
OPSI
LVDT
LVCK
XRD
LR
XRST
XOPRQ
VH-
U+
W+
W-
UOUT
U-
WOUT
VOUT
VH+
V-
V+
PGOUT+
PGOUT-
DFG+
DFG-
IM
IG
VIN
CFGB
GND
CFGA


MAIN UNIT
(RWZ2445)
IC904
SAA7350
1bit
DAC
IC907
SMS840AP
DIGITAL
FILTER
3rd LPF
LINE MUTE
DA SECTION
GROUNDING
HEAD PHONE
UNIT
HEADPHONE AMP
REEL FG AMP
SOLENOID
ON/OFF
MODE MOTOR&LOADING
MOTOR DRIVER
IC506
LB1687
DRUM MOTOR DRIVER
IC507
LB1687
CAPSTAN MOTOR DRIVER
IC509, IC510 FG/PG AMP
PLL
OPERATION
/DISPLAY
UNIT
TIMER SWICH
UNIT
OPERATE
CONTROL
IC1201
PDB030A
V1201
RAW1055
CN05
CN06
CN07
CN13
CN03
CN04
CN14
J13
J14
ENC0
ENC3
ENC2
ENC1
HALF
INH
DGND
LEDEND
SOL-
RFGT
RFGS
9V
T-END
LEDTOP
T-TOP
MDM-
MDM+
LDST
XLDEN
LDM+
LDM-
D5V
AC1
AC2
-26V
OPCK
OPSD
OPSI
LVDT
LVCK
XRD
LR
XRST
XOPRQ
VH-
U+
W+
W-
UOUT
U-
WOUT
VOUT
VH+
V-
V+
PGOUT+
PGOUT-
DFG+
DFG-
IM
IG
CFGB
GND
CFGA
DADT
XBCK
LRCK
DIN
XBCK
ADDT
PLLK
POFF
SOLON
TTOP
TEND
MDMON
LDMON
MLMCW
RFGT
RFGS
TLED
XRMSIG
PLAYBACK SIGNAL
RECORDING SIGNAL
CAPSTAN MOTOR DRIVE SIGNAL
CAPSTAN MOTOR CONTROL SIGNAL
DRAM MOTOR DRIVE SIGNAL
DRAM MOTOR CONTROL SIGNAL
LOADING MOTOR DRIVE SIGNAL
MODE MOTOR DRIVE SIGNAL
REEL CONTROL SIGNAL
CHIP PART
NOTE
No part number indicates that the transistor corresponds with 2SC1740S
No part number indicates that the diode corresponds with 1SS254

A5

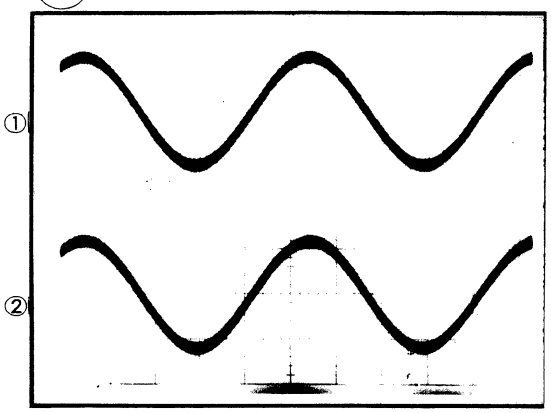


A5 : CLOCK/DATA output of DF (DAC input)

500nS/div, 5V/div
① WCKO (IC907－Pin13)
② BCKO (IC907－Pin15)
③ DOL (IC907－Pin12)
④ DOR (IC907－Pin11)

Mode : 1kHz, 0dB (PLAY or REC)

A6



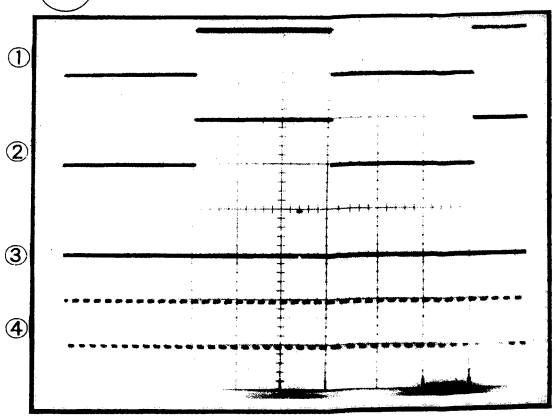
A6 : Analog waveform of around LPF

200μS/div, 0.5V/div
① IC701－Pin2
② IC701－Pin3

Mode : 1kHz, 0dB (PLAY or REC)

< Digital Section >

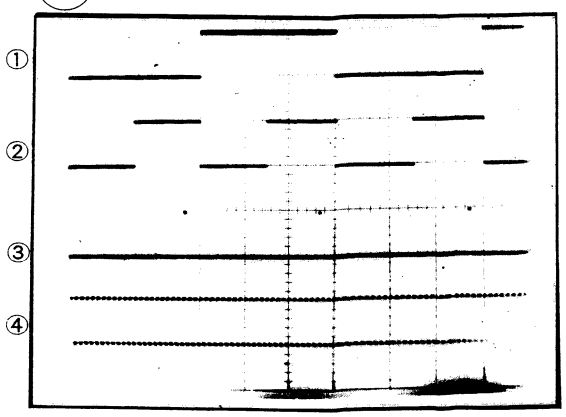
D1



D1 : SP mode PLAY 5V/div, 5mS/div

① DREF (CN19－Pin2)
② SWP (IC503－Pin63) H : Bch, L : Ach
③ SDP (IC510－Pin14)
④ DFG (IC510－Pin13)

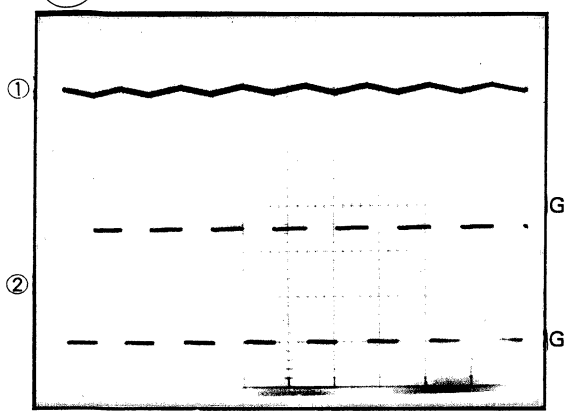
D2



D2 : LP mode PLAY 5V/div, 10mS/div

① DREF (CN19－Pin2)
② SWP (IC503－Pin63) H : Bch, L : Ach
③ SDP (IC510－Pin14)
④ DFG (IC510－Pin13)

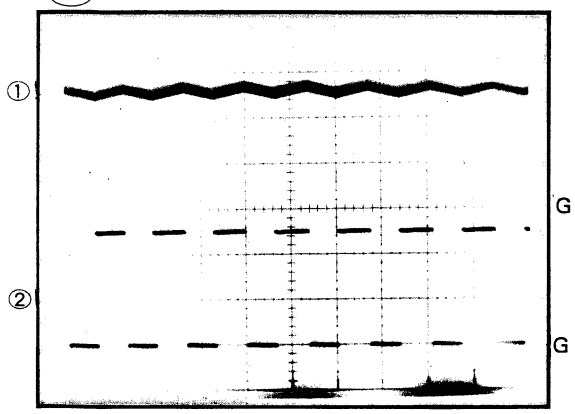
D3



D3 : PLAY 20μS/div

① D－Vo (IC504－Pin14) 1V/div
② DERR (IC503－Pin64) 2V/div

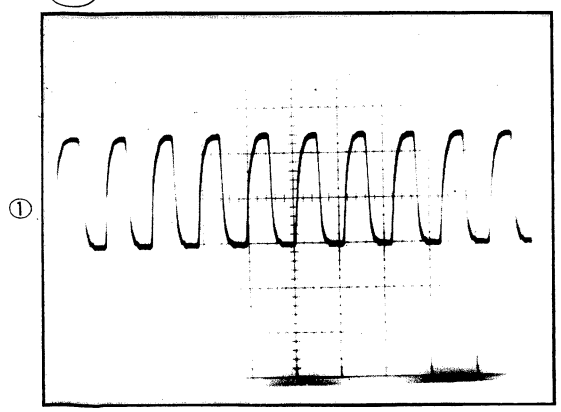
D4



D4 : PLAY 20μS/div

① C－Vo (IC504－Pin8) 1V/div
② CERR (IC503－Pin65) 2V/div

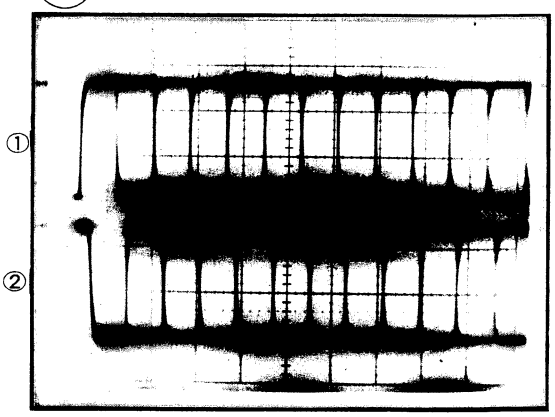
D5



D5

① MCLK (IC503－Pins35, 61) 0.1μS/div, 2V/div

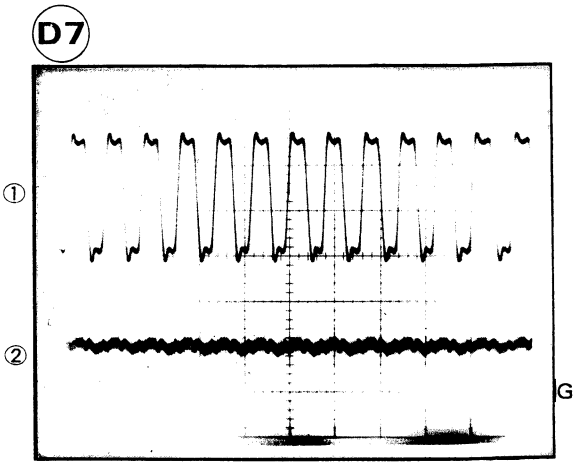
D6



D6 : Digital REC (fs : 48k) 0.2μS/div, 2V/div

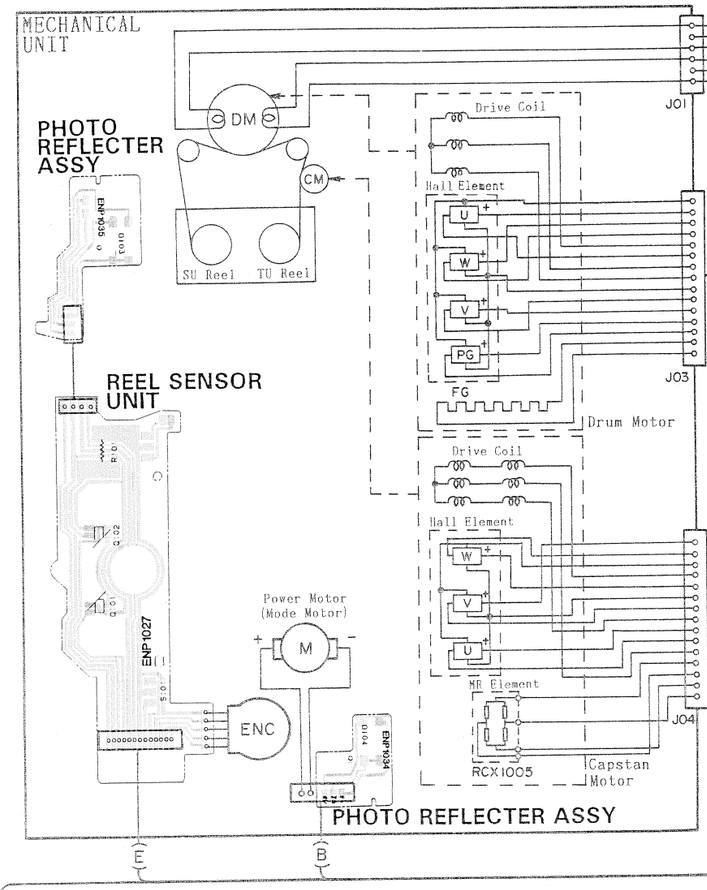
① RX (IC515－Pin8)
② TX (IC501－Pin54)

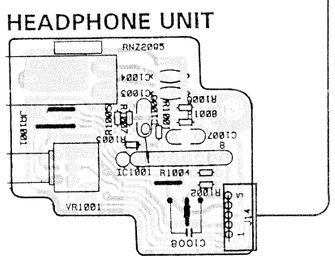
D7

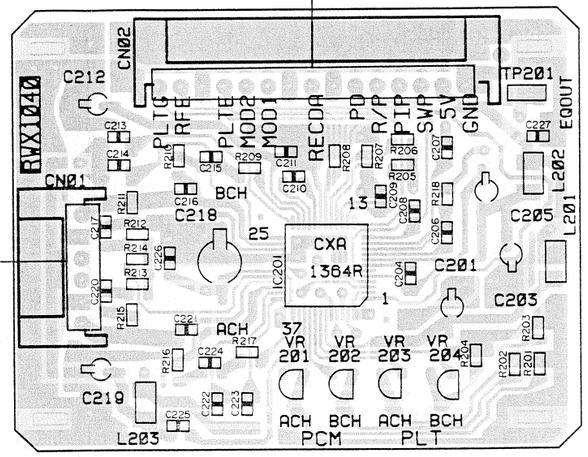


D7 : Digital REC (fs : 48k) 50nS/div

① PLCo (IC517－Pin8) 2V/div
② PDo (IC501－Pin45) 1V/div

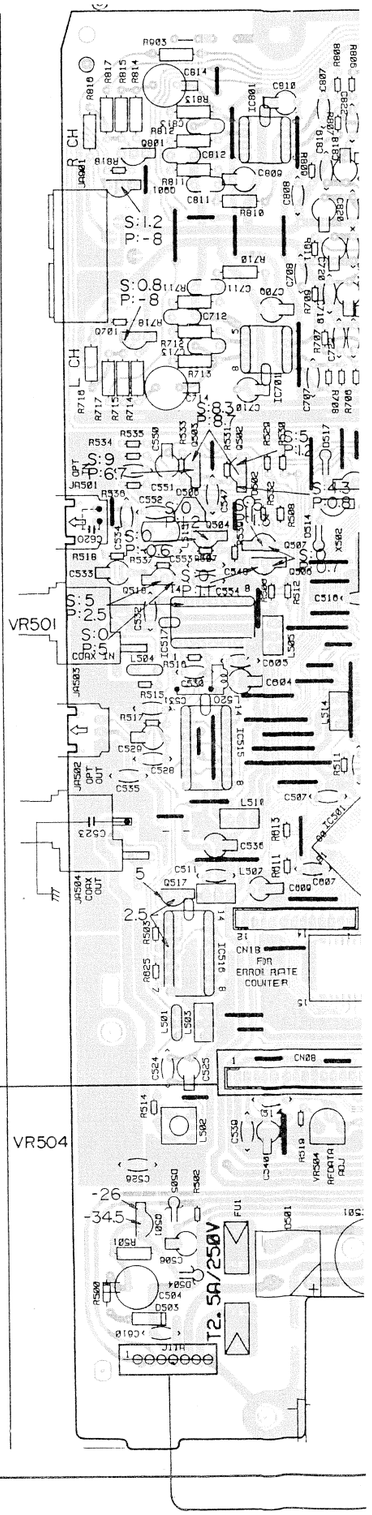


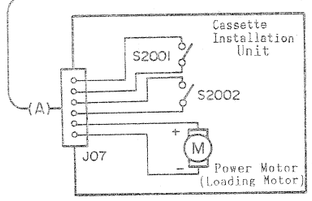


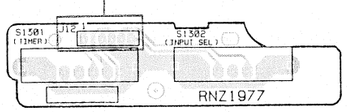


RF UNIT (RWX1040)

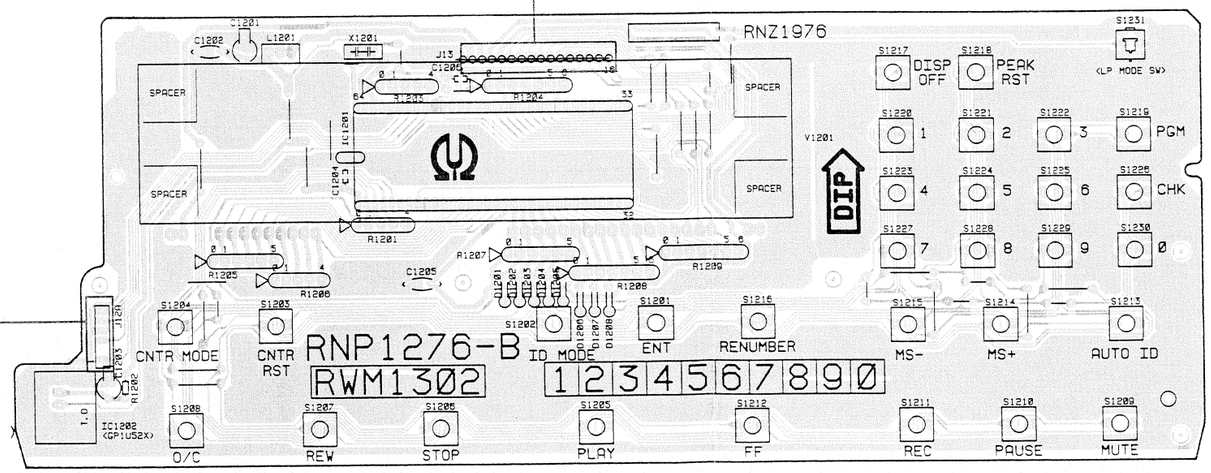
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Q801 IC908
Q901 IC906 IC901
IC904
IC907 IC905 IC902
Q701
IC701 IC911 IC909
Q503 Q502 IC511
Q508 Q521
Q504 Q507 IC513 Q506 Q518
IC514 IC503
IC517 IC505
IC504 Q509
IC515 IC510
Q505
IC501 IC507
IC509
Q517 Q519 Q520 Q522 Q510
IC516 IC508
IC502 Q513 Q523 Q512 Q511
Q514
IC512 IC506
Q516 Q515
Q501



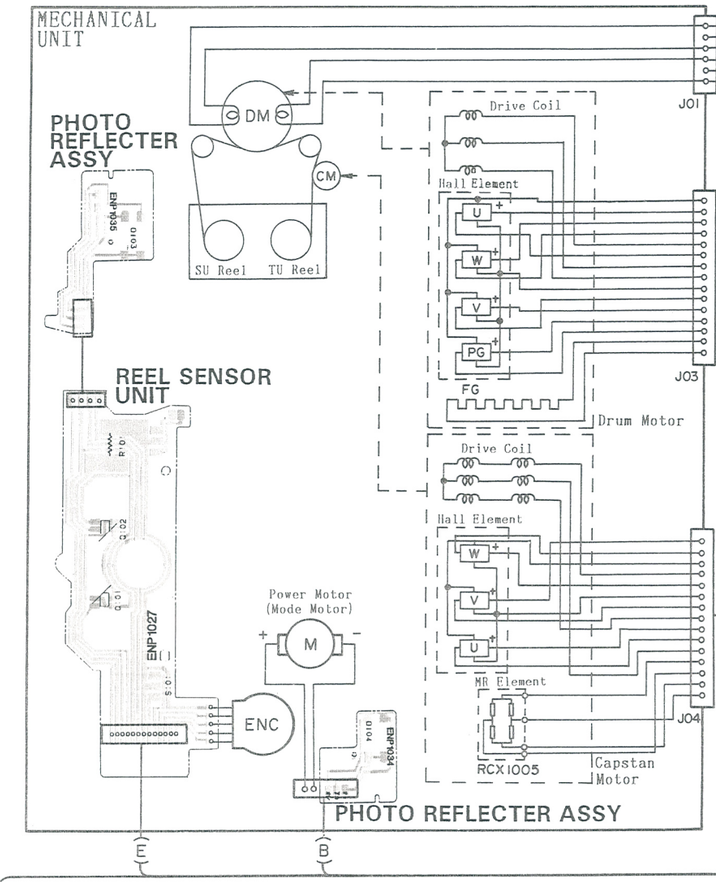


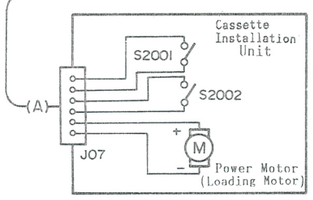


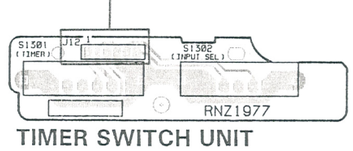
TIMER SWITCH UNIT



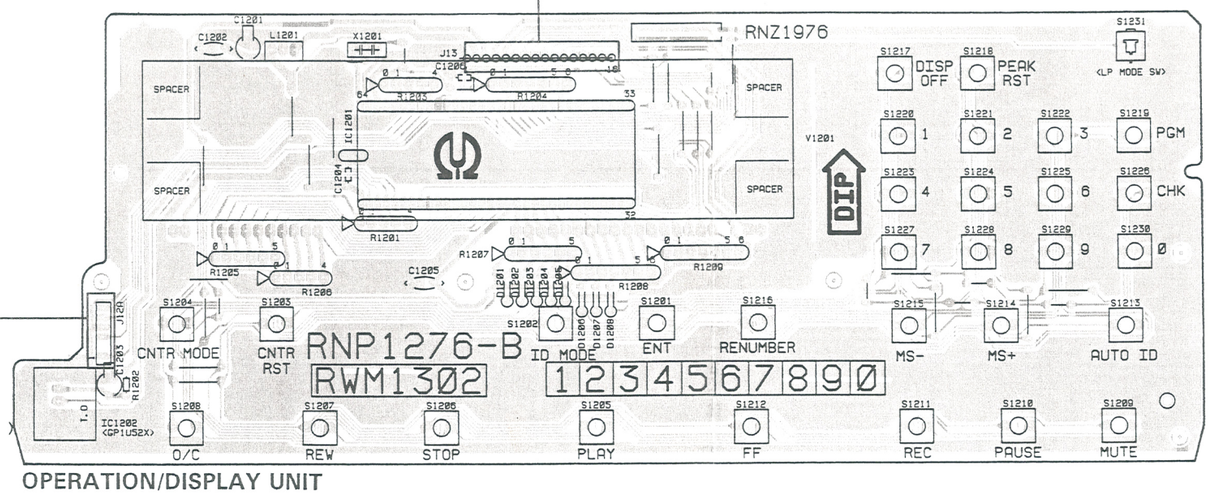
OPERATION/DISPLAY UNIT



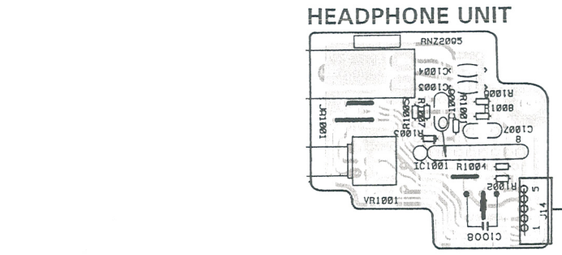


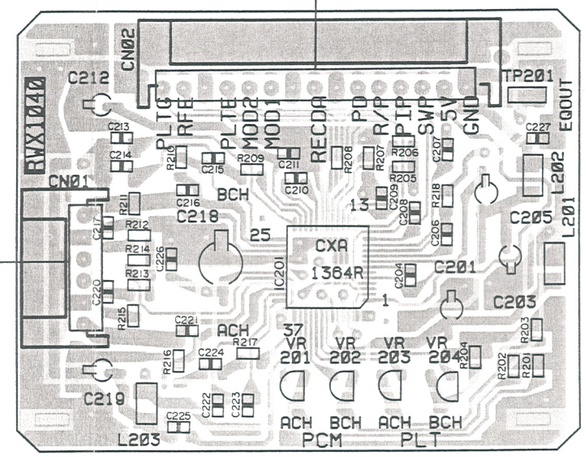


TIMER SWITCH UNIT



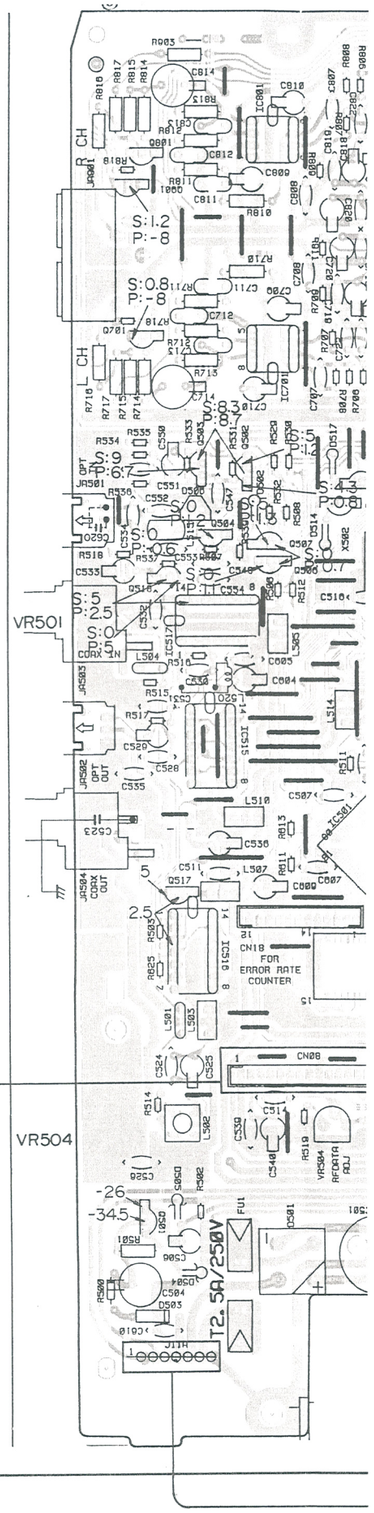
OPERATION/DISPLAY UNIT



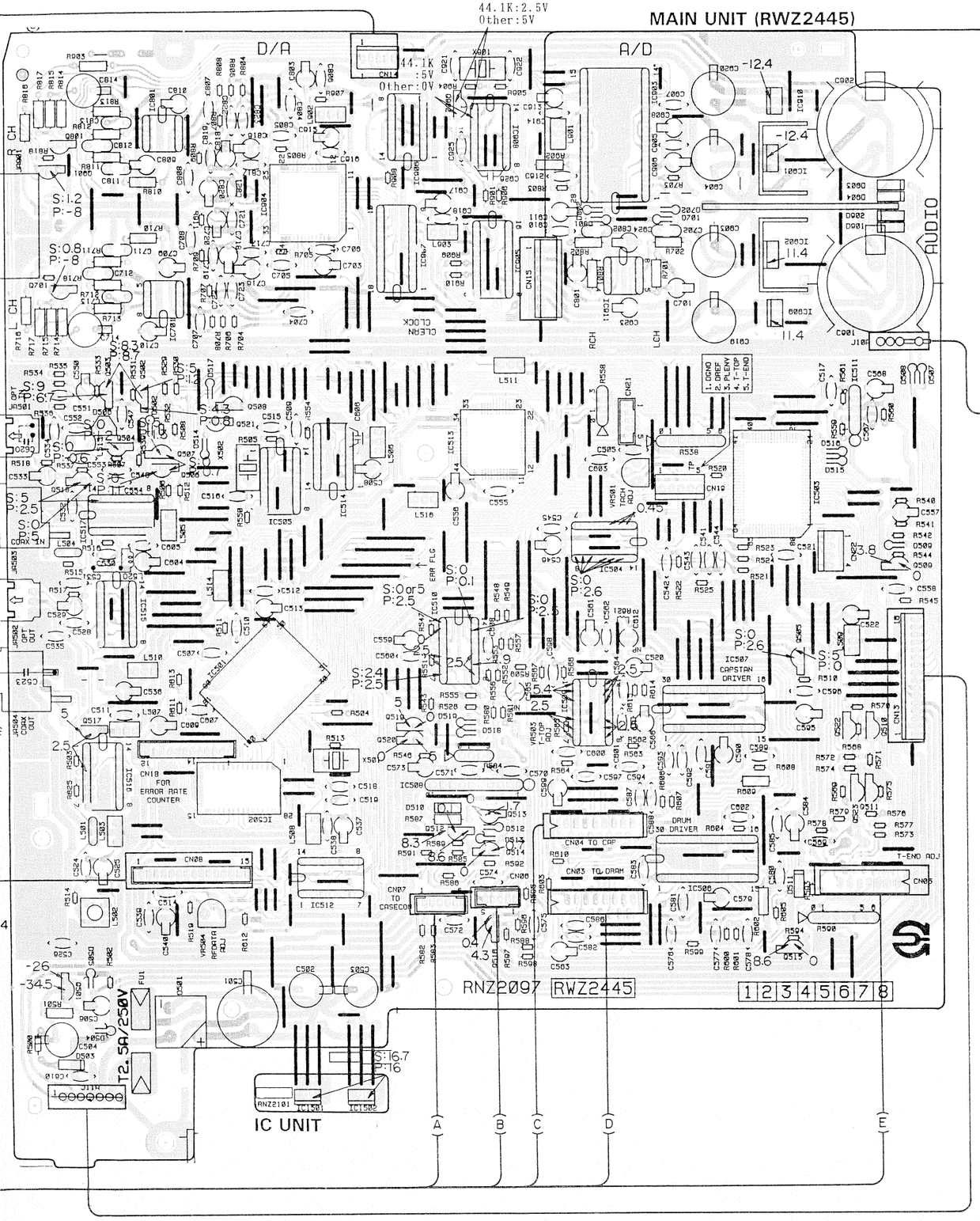


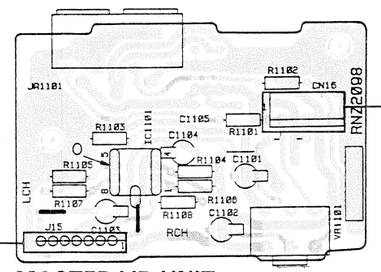
RF UNIT (RWX1040)

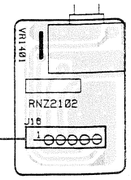
IC801 Q902 IC903 IC910
Q801 IC908
Q901 IC906 IC901
IC904
IC907 IC905 IC902
Q701
IC701 IC911 IC909
Q503 IC511
Q502
Q508
Q521
Q504
Q507 IC513
Q506
Q518
IC514 IC503
IC517 IC505
IC504 Q509
IC515 IC510
Q505
IC501 IC507
IC509
Q517 Q519 Q522
Q520 Q510
IC516 IC508
IC502 Q513 Q523
Q512 Q511
Q514
IC512 IC506
Q516 Q515
Q501

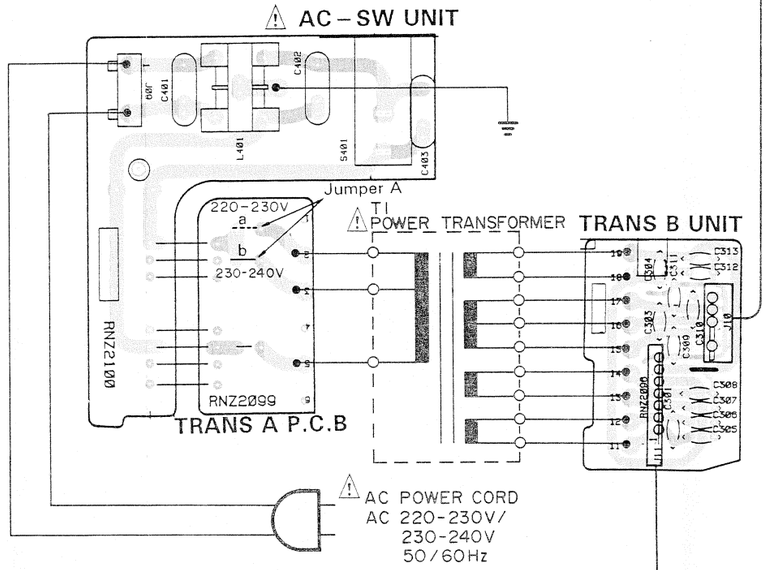


MAIN UNIT (RWZ2445)









Line Voltage Selection

Line voltage can be changed with the following steps.

1. Disconnect the AC power cord.
2. Remove the top cover.
3. Change the position of the jumper wire A as follows.

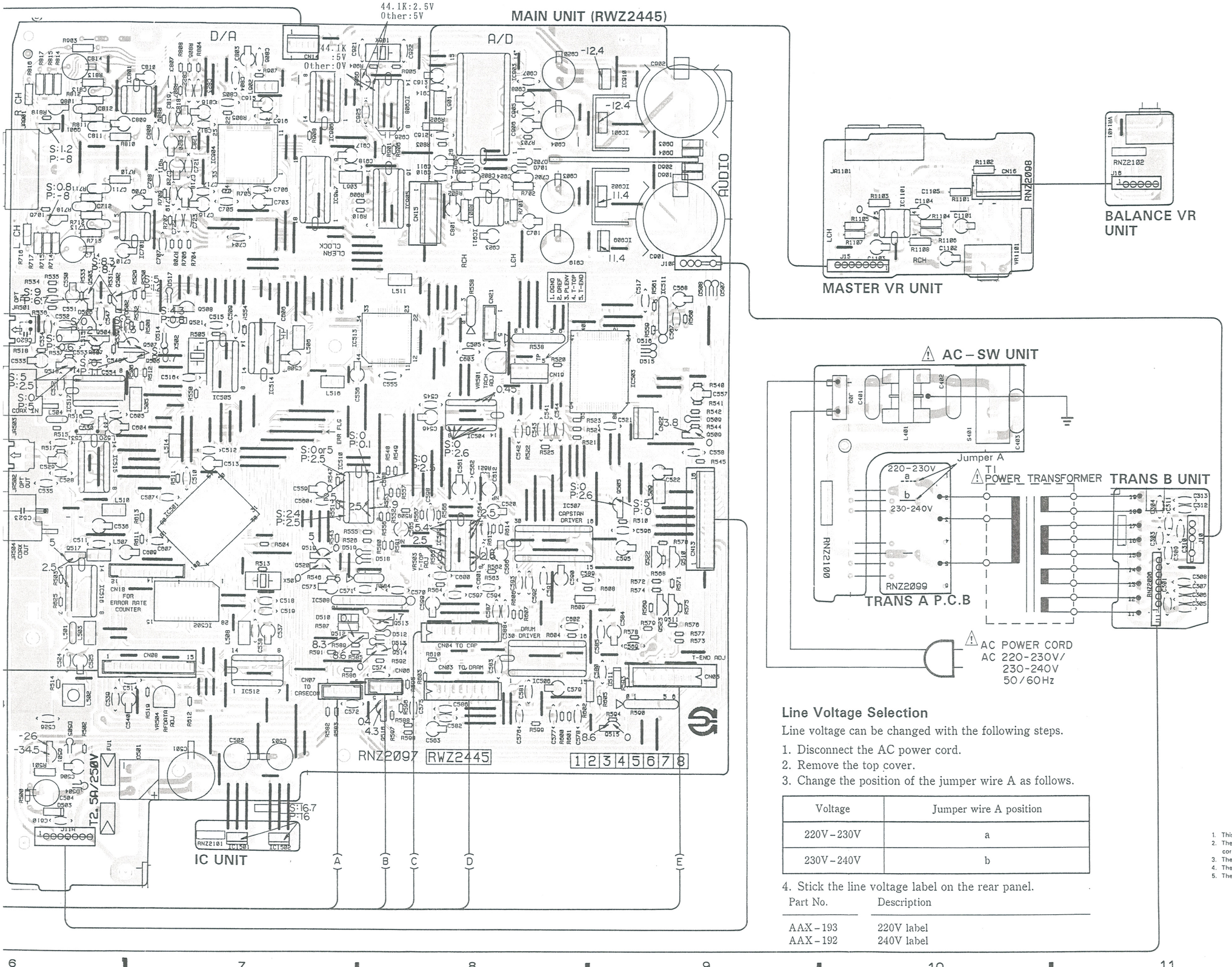
Voltage	Jumper wire A position
220V – 230V	a
230V – 240V	b

4. Stick the line voltage label on the rear panel.

Part No.	Description
AAX – 193	220V label
AAX – 192	240V label

P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
D S G		FET
		Diode
		Zenner diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
SA		Styrol capacitor
NP		Electrolytic capacitor (Non polarized)
NL		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.



Line Voltage Selection

Line voltage can be changed with the following steps.

1. Disconnect the AC power cord.
2. Remove the top cover.
3. Change the position of the jumper wire A as follows.

Voltage	Jumper wire A position
220V – 230V	a
230V – 240V	b

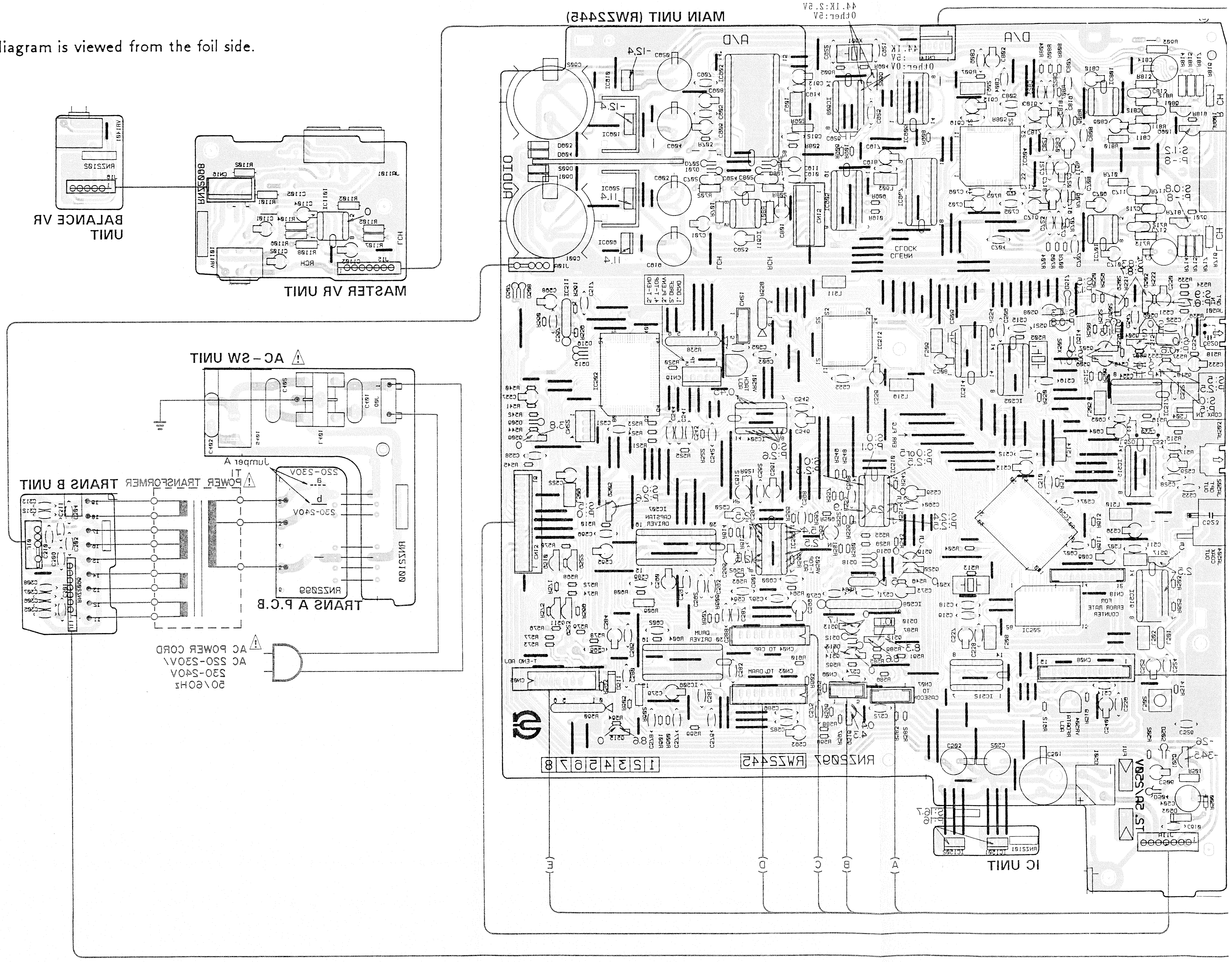
4. Stick the line voltage label on the rear panel.

Part No.	Description
AAX-193	220V label
AAX-192	240V label

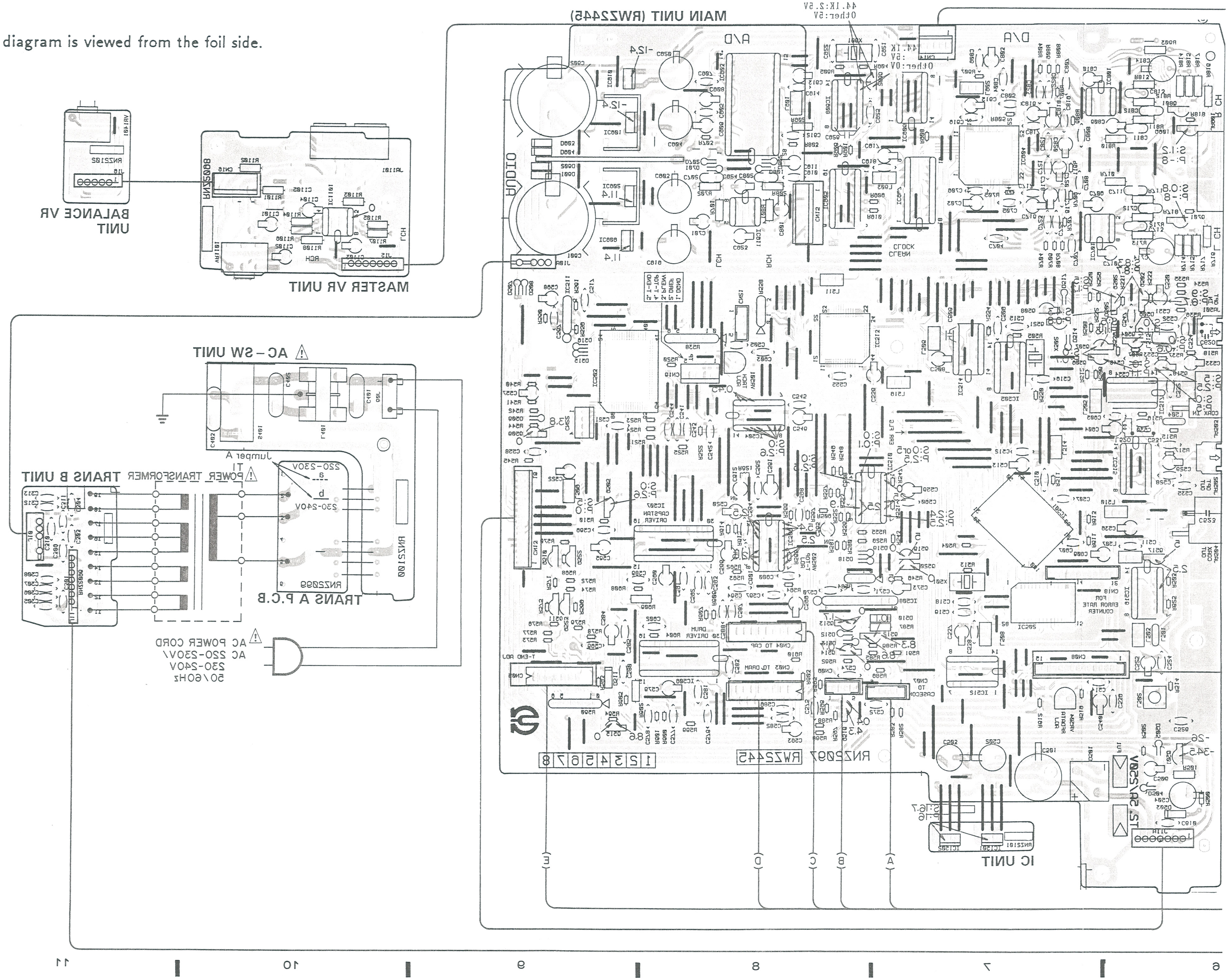
P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zenner diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styrol capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

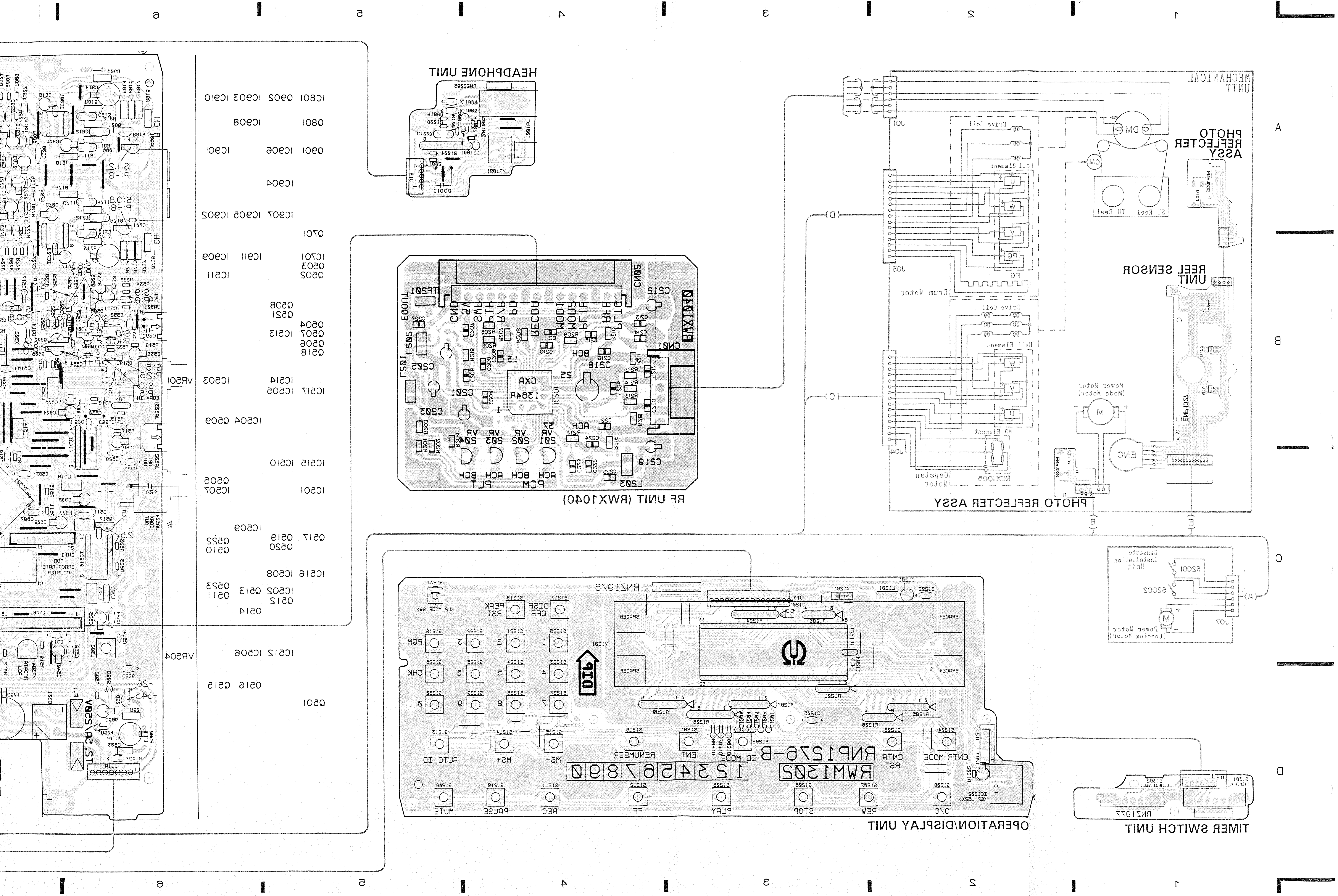
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

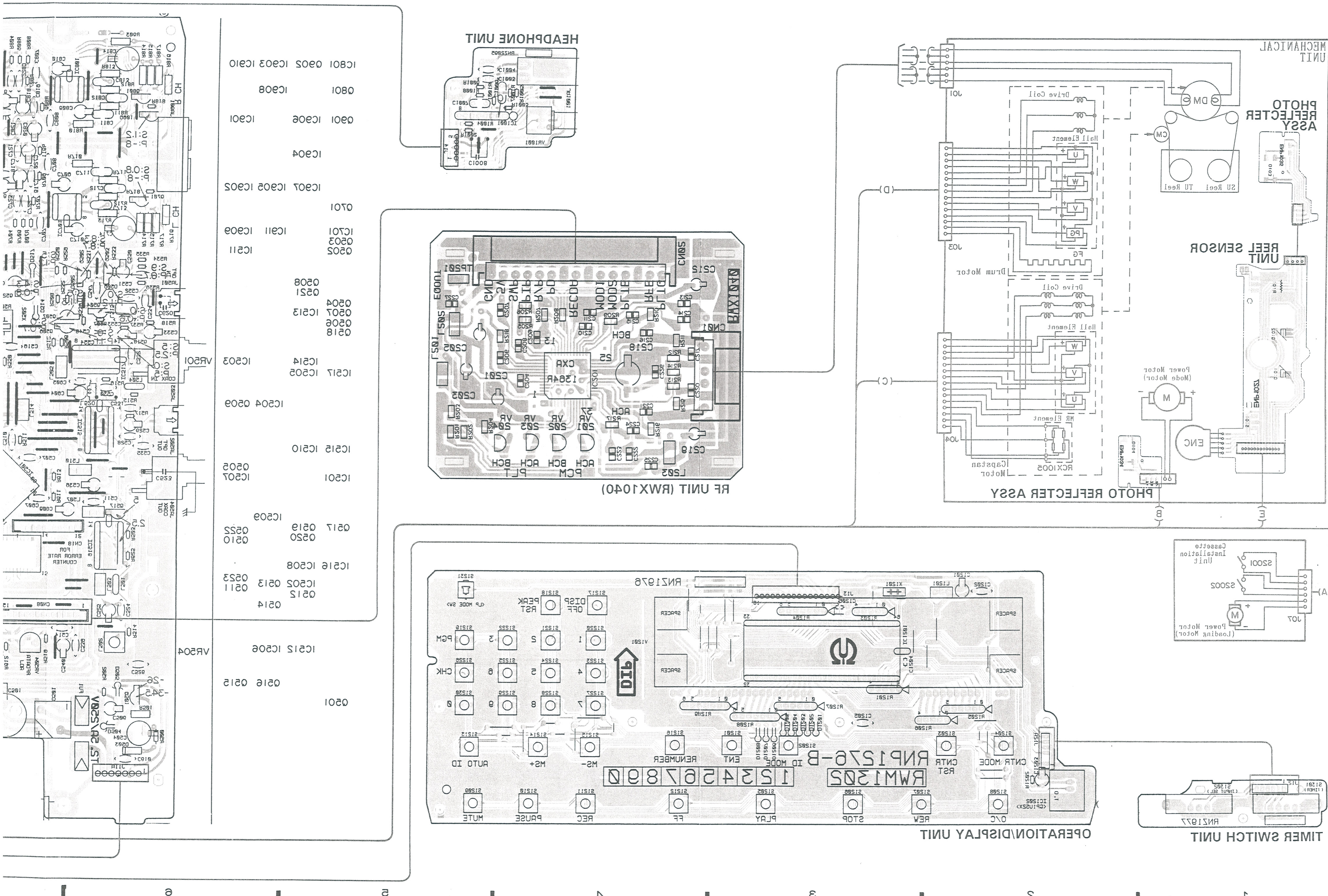
This P.C.B. connection diagram is viewed from the foil side.



This P.C.B. connection diagram is viewed from the foil side.




HEADPHONE UNIT
RF UNIT (RWX1040)
MECHANICAL UNIT
PHOTO REFLECTER ASSY
REEL SENSOR UNIT
Drum Motor
Capstan Motor
Power Motor (Mode Motor)
Cassette Installation Unit
Power Motor (Loading Motor)
OPERATION/DISPLAY UNIT
RNP1276-B
RWM1302
TIMER SWITCH UNIT
RNZ1977
RNZ1976
IC801 Q902 IC903 IC910
Q801 IC908
Q901 IC906 IC901
IC904
IC907 IC905 IC902
Q701
IC701 Q503 Q502 IC911 IC909 IC511
Q508 Q521
Q504 Q507 Q506 Q518 IC513
IC517 IC514 IC505 IC503
IC504 Q509
IC515 IC510
IC501 Q505 IC507
IC509
Q517 Q519 Q520 Q522 Q510
IC516 IC508
IC502 Q513 Q512 Q523 Q511 Q514
IC512 IC506
Q501 Q516 Q515
VR501
VR504


HEADPHONE UNIT
RF UNIT (RWX1040)
MECHANICAL UNIT
PHOTO REFLECTER ASSY
REEL SENSOR UNIT
PHOTO REFLECTER ASSY
Cassette Installation Unit
Power Motor (Loading Motor)
Power Motor (Mode Motor)
Drum Motor
Capstan Motor
OPERATION/DISPLAY UNIT
TIMER SWITCH UNIT
RNP1276-B
RWM1302

5. PCB's PARTS LIST

NOTES:

- *Part without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 × 10¹*	*561*	*RD1/8PM 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621*	*RN1/4SR 5 6 2 1 F*

Mark No.	Description	Parts No.
◉ RF UNIT (RWX1040)		
SEMICONDUCTORS		
IC201	RF IC	CXA1364R
COILS		
L201 – 203	COIL	RTF1173
CAPACITORS		
C201, 203	CHIP CAPACITOR 10UF	RCH1052
C204	CHIP CAPACITOR	CCSQCH101J50
C205	CHIP CAPACITOR 4.7UF	RCH1053
C206	CHIP CAPACITOR	CCSQSL471J50
C207	CERAMIC CAPACITOR	CKSQYB272K50
C208	CHIP CERAMIC C.	CCSQCH221J50
C209	CHIP CAPACITOR	CCSQCH101J50
C210	CHIP CERAMIC C.	CCSQCH221J50
C211	CERAMIC CAPACITOR	CKSQYF104Z25
C212	CHIP CAPACITOR 10UF	RCH1052
C213	CERAMIC CAPACITOR	CKSYF334Z25
C214	CHIP CAPACITOR	CKSYF154Z25
C215	CHIP CAPACITOR	CCSQCH101J50
C216	CERAMIC CAPACITOR	CKSQYF104Z25
C217	CHIP CAPACITOR	CKSQYB102K50
C218	CHIP CAPACITOR 100UF	RCH1054
C219	CHIP CAPACITOR 10UF	RCH1052
C220	CHIP CAPACITOR	CKSQYB102K50
C221	CERAMIC CAPACITOR	CKSQYF104Z25
C222	CHIP CAPACITOR	CKSYF154Z25
C223	CERAMIC CAPACITOR	CKSYF334Z25
C224	CHIP CAPACITOR	CCSQCH101J50
C225	CERAMIC CAPACITOR	CKSQYB332K50
C226, 227	CERAMIC CAPACITOR	CKSQYF104Z25
RESISTORS		
VR201, 202	CHIP VR 10K	RCP1085
VR203, 204	CHIP VR 47K	RCP1086
	Other resistors	RS1/10S□□□J

Mark No.	Description	Parts No.
BALANCE VR UNIT		
RESISTOR		
VR1401	VARIABLE RESISTOR	RCV1072
OPERATION/DISPLAY UNIT		
SEMICONDUCTORS		
IC1201	MODE CONTROL MCU	PDB030A
D1201 – 1208	DIODE	1SS254
SWITCHES		
S1201 – 1230	SWITCH	RSG1034
S1231	SWITCH	RSG1032
COIL		
L1201	EMI FILTER 222	RTF1165
CAPACITORS		
C1201	ELECTR. CAPACITOR	CEAS470M16
C1202	CERAMIC CAPACITOR	CGCYX473K25
C1203	ELECTR. CAPACITOR	CEAS220M25
C1204	CERAMIC CAPACITOR	CKPUYF223Z25
C1205	CERAMIC CAPACITOR	CGCYX473K25
C1206	CERAMIC CAPACITOR	CKPUYF223Z25
RESISTORS		
R1201	RESISTOR ARRAY (47K)	RCX1045
R1202	CARBON FILM RESISTOR	RD1/6PM470J
R1203	RESISTOR ARRAY (47K)	RCX1045
R1204	RESISTOR ARRAY (47K)	RCX1047
R1205	RESISTOR ARRAY (47K)	RCX1046

Mark	No.	Description	Parts No.
	R1206	RESISTOR ARRAY (47K)	RCX1045
	R1207	RESISTOR ARRAY (47K)	RCX1046
	R1208, 1209	RESISTOR ARRAY (47K)	RCX1047
OTHERS			
		REMOTE SENSOR UNIT	GP1U52X
	V1201	FL TUBE	RAW1055
	X1201	CERAMIC RESONATOR	VSS1045

TIMER SWITCH UNIT

SWITCHES

	S1301, 1302	SLIDE SWITCH	RSH1011

HEADPHONE UNIT

SEMICONDUCTORS

	IC1001	OP-AMP IC	M5216L

CAPACITORS

	C1003, 1004	CERAMIC CAPACITOR	CGCYX473K25
	C1006, 1007	AUDIO FILM CAPACITOR	CFTXA183J50
	C1008	ELECTR. CAPACITOR	CEAS330M35

RESISTORS

	VR1001	VARIABLE RESISTOR	PCS1002
		Other resistors	RD1/6PM□□□J

OTHERS

	JA1001	JACK	RKN1023

TRANS B UNIT

CAPACITORS

⚠	C301	CERAMIC CAPACITOR	CKCYF103Z50
⚠	C303-313	CERAMIC CAPACITOR	CKCYF103Z50

◉ MAIN UNIT (RWZ2445)

SEMICONDUCTORS

	IC501	DSP IC	CXD2601AQ
	IC502	SRAM	LH52256N-90L
	IC503	SYSTEM CONTROLLER	PDG070C
	IC504	OP-AMP IC	NJM2902N
	IC505	LOGIC IC	TC74HCU04AP
	IC506, 507	MOTOR DRIVER	LB1687
	IC508	MOTOR DRIVER IC	TA7288P
	IC509	OP-AMP IC	NJM2902N
	IC510	COMPARATOR	LM339
	IC511	SYSTEM RESET IC	M51957AL
	IC512	LOGIC IC	TC74HC08AP
	IC513	LEVELMETER INTERFACE	PD2020
	IC514	LOGIC IC	TC74HC74AP
	IC515	LOGIC IC	TC74HC00AP
	IC516, 517	LOGIC IC	TC74HCU04AP
	IC701, 801	OP-AMP IC	NJM5532DD
⚠	IC901	REGULATOR IC	NJM79M05FA
⚠	IC902	REGULATOR IC	NJM78M05FA
	IC903	A/D CONVERTER IC	CS5339
	IC904	IC	SAA7350
	IC905	LOGIC IC	TC74HC153AP
	IC906	LOGIC IC	TC74HC74AP
	IC907	DIGITAL FILTER,IC	SM5840AP
	IC908	LOGIC IC	TC74HCU04AP
⚠	IC909	REGULATOR IC	NJM78M08FA
	IC910	REGULATOR IC	NJM79M08FA
	IC911	OP-AMP, IC	M5218AP
⚠	Q501	TRANSISTOR	2SA1283
	Q502	TRANSISTOR	2SC1740S
	Q503	TRANSISTOR	2SA933S
	Q504	TRANSISTOR	2SC1740S
	Q505	DIGITAL TRANSISTOR	XDC114ES
	Q506, 507	TRANSISTOR	2SC1740S
	Q508	DIGITAL TRANSISTOR	XDA114ES
	Q509-511	TRANSISTOR	2SC1740S
	Q512	TRANSISTOR	2SA933S
	Q513	DIGITAL TRANSISTOR	XDC114ES
	Q514	TRANSISTOR	2SC1740S
	Q515	TRANSISTOR	2SC3246
	Q516	TRANSISTOR	2SC1740S
	Q517, 518	DIGITAL TRANSISTOR	XDA114ES
	Q519, 520	DIGITAL TRANSISTOR	XDC114ES
	Q521-523	DIGITAL TRANSISTOR	XDA114ES
	Q701, 801	TRANSISTOR	2SD1302
	Q901	DIGITAL TRANSISTOR	XDC114ES
	Q902	TRANSISTOR	DTA143ES
⚠	D501	BRIDGE STACK	S2VB20
	D502	DIODE	1SS254
⚠	D503	RECRIFIER DIODE	1SR35-100A
⚠	D504	ZENER DIODE	MTZJ27C
	D505	ZENER DIODE	MTZJ7.5A
	D506	VARI-CAP	FC63M-1/2/4/5
	D507-509	DIODE	1SS254
	D510, 511	RECRIFIER DIODE	1SR35-100A
	D512	DIODE	1SS254
	D513	ZENER DIODE	MTZJ2.0A
	D514-519	DIODE	1SS254
	D701, 702	DIODE	1SS254
	D801, 802	DIODE	1SS254
⚠	D901-904	DIODE	EL1Z-LFG1

Mark No.	Description	Parts No.
COILS		
L501	COIL	RTF1167
L502	COIL	PTL1003
L503	EMI FILTER 101	RTF1162
L504	COIL	RTF1167
L505	COIL	RTF1171
L506	EMI FILTER 222	RTF1165
L507	COIL	RTF1171
L508, 509	EMI FILTER 222	RTF1165
L510	COIL	RTF1171
L511	EMI FILTER 470	RTF1164
L514	EMI FILTER 222	RTF1165
L515	RADIAL INDUCTOR	LFA1R5J
L516	EMI FILTER 222	RTF1165
L520	RADIAL INDUCTOR	LFA151J
L901	EMI FILTER 222	RTF1165
L902	COIL	RTF1171
L903	EMI FILTER 222	RTF1165
CAPACITORS		
C501	ELECTROLYTIC CAPACITOR	CEAS472M25
C502	ELECTR. CAPACITOR	CEAS471M10
C503	ELECTROLYTIC CAPACITOR	CEAS471M6R3
C504	ELECTR. CAPACITOR	CEAS101M50
C505	CERAMIC CAPACITOR	CGCYX473K25
C506	ELECTROLYTIC CAPACITOR	CEAS470M35
C507	CERAMIC CAPACITOR	CGCYX103K25
C508	ELECTR. CAPACITOR	CEAS470M16
C509	CERAMIC CAPACITOR	CGCYX473K25
C510	CERAMIC CAPACITOR	CGCYX103K25
C511, 512	CERAMIC CAPACITOR	CGCYX473K25
C513	ELECTR. CAPACITOR	CEAS470M16
C514	CERAMIC CAPACITOR	CKCYB102K50
C515, 516	CERAMIC CAPACITOR	CCCCH100D50
C517	CERAMIC CAPACITOR	CGCYX473K25
C518	CERAMIC CAPACITOR	CCCCH220J50
C519	CERAMIC CAPACITOR	CCCCH270J50
C520	ELECTR. CAPACITOR	CEAS100M50
C521	CERAMIC CAPACITOR	CGCYX473K25
C522	ELECTR. CAPACITOR	CEAS470M16
C523	CERAMIC CAPACITOR	CGDYF104Z25
C524	CERAMIC CAPACITOR	CGCYX103K25
C525	ELECTROLYTIC CAPACITOR	CEAS330M35
C526	CERAMIC CAPACITOR	CGCYF104Z25
C528	CERAMIC CAPACITOR	CGCYX103K25
C529	ELECTROLYTIC CAPACITOR	CEAS330M35
C530, 531	CERAMIC CAPACITOR	CCCCH470J50
C532	CERAMIC CAPACITOR	CGCYX473K25
C533	ELECTR. CAPACITOR	CEAS470M16
C534	CERAMIC CAPACITOR	CGCYF104Z25

Mark No.	Description	Parts No.
C535	CERAMIC CAPACITOR	CGCYX473K25
C536, 537	ELECTR. CAPACITOR	CEAS470M16
C538, 539	CERAMIC CAPACITOR	CGCYX473K25
C540	ELECTR. CAPACITOR	CEAS470M16
C541, 542	CERAMIC CAPACITOR	CGCYX103K25
C543, 544	CERAMIC CAPACITOR	CKCYB222K50
C545	CERAMIC CAPACITOR	CGCYX473K25
C546	ELECTR. CAPACITOR	CEAS470M16
C547	CERAMIC CAPACITOR	CGCYX473K25
C548	CERAMIC CAPACITOR	CCCCH151J50
C550	ELECTR. CAPACITOR	CEAS4R7M50
C551 – 553	CERAMIC CAPACITOR	CGCYX103K25
C554	CERAMIC CAPACITOR	CCCCH220J50
C555	CERAMIC CAPACITOR	CGCYX473K25
C556	ELECTR. CAPACITOR	CEAS470M16
C557	ELECTR. CAPACITOR	CEAS4R7M50
C558	CERAMIC CAPACITOR	CGCYX103K25
C559	ELECTR. CAPACITOR	CEAS470M16
C560	CERAMIC CAPACITOR	CGCYX473K25
C561	ELECTR. CAPACITOR	CEAS470M16
C562	CERAMIC CAPACITOR	CGCYX473K25
C563	ELECTR. CAPACITOR	CEAS100M50
C564	CERAMIC CAPACITOR	CKCYB222K50
C565	ELECTROLYTIC CAPACITOR	CEANP0R1M50
C566	ELECTR. CAPACITOR	CEAS470M16
C567	CERAMIC CAPACITOR	CGCYX473K25
C568	ELECTR. CAPACITOR	CEASR33M50
C569, 570	CERAMIC CAPACITOR	CCCCH470J50
C571, 572	CERAMIC CAPACITOR	CGCYX473K25
C573	ELECTR. CAPACITOR	CEAS470M16
C574	CERAMIC CAPACITOR	CGCYX473K25
C575	CERAMIC CAPACITOR	CGCYX103K25
C576 – 578	CERAMIC CAPACITOR	CGCYX473K25
C579	ELECTR. CAPACITOR	CEAS470M16
C580	CERAMIC CAPACITOR	CGCYX473K25
C581 – 583	CERAMIC CAPACITOR	CGCYX103K25
C584	ELECTR. CAPACITOR	CEAS470M16
C585	CERAMIC CAPACITOR	CGCYX473K25
C586	CERAMIC CAPACITOR	CGCYX103K25
C587 – 589	CERAMIC CAPACITOR	CGCYX473K25
C590	ELECTR. CAPACITOR	CEAS470M16
C591	CERAMIC CAPACITOR	CGCYX473K25
C592 – 594	CERAMIC CAPACITOR	CGCYX103K25
C595	ELECTR. CAPACITOR	CEAS470M16
C596	CERAMIC CAPACITOR	CGCYX473K25
C597	CERAMIC CAPACITOR	CGCYX103K25
C598	CERAMIC CAPACITOR	CKCYB102K50
C599	ELECTR. CAPACITOR	CEASR47M50
C600	CERAMIC CAPACITOR	CCCSL221J50
C601	CERAMIC CAPACITOR	CGCYX473K25
C602	CERAMIC CAPACITOR	CKCYB222K50
C603	CERAMIC CAPACITOR	CGCYX473K25
C604	ELECTR. CAPACITOR	CEAS470M16

Mark	No.	Description	Parts No.
	C605	CERAMIC CAPACITOR	CGCYX473K25
	C606	CERAMIC CAPACITOR	CCDCH101J50
	C607	CERAMIC CAPACITOR	CCCCH910J50
	C608	CERAMIC CAPACITOR	CKCYB472K50
	C609	ELECTR. CAPACITOR	CEAS470M16
⚠	C610	CERAMIC CAPACITOR	CKCYF103Z50
	C612	ELECTROLYTIC CAPACITOR	CEANP100M16
	C620	ELECTROLYTIC CAPACITOR	CEAS470M16
	C701	ELECTROLYTIC CAPACITOR	CENA470M25
	C702	AUDIO FILM CAPACITOR	CFTXA103J50
	C703	ELECTR. CAPACITOR	CEAS470M16
	C704, 705	CERAMIC CAPACITOR	CCCCH390J50
	C706	CERAMIC CAPACITOR	CGCYX473K25
	C707, 708	CERAMIC CAPACITOR	CCCCH560J50
	C709, 710	ELECTROLYTIC CAPACITOR	CENA220M50
	C711	AUDIO FILM CAPACITOR	CFTXA152J50
	C712	AUDIO FILM CAPACITOR	CFTXA682J50
	C713	AUDIO FILM CAPACITOR	CFTXA122J50
	C714	ELECTROLYTIC CAPACITOR	CENA470M50
	C716	ELECTR. CAPACITOR	CEAS470M16
	C717	CERAMIC CAPACITOR	CGCYX473K25
	C718	ELECTR. CAPACITOR	CEAS470M16
	C719	CERAMIC CAPACITOR	CGCYX473K25
	C720	ELECTR. CAPACITOR	CEAS470M16
	C721	CERAMIC CAPACITOR	CGCYX473K25
	C722, 723	CERAMIC CAPACITOR	CCCSL471J50
	C801	ELECTROLYTIC CAPACITOR	CENA470M25
	C802	AUDIO FILM CAPACITOR	CFTXA103J50
	C803	ELECTR. CAPACITOR	CEAS470M16
	C804, 805	CERAMIC CAPACITOR	CCCCH390J50
	C806	CERAMIC CAPACITOR	CGCYX473K25
	C807, 808	CERAMIC CAPACITOR	CCCCH560J50
	C809, 810	ELECTROLYTIC CAPACITOR	CENA220M50
	C811	AUDIO FILM CAPACITOR	CFTXA152J50
	C812	AUDIO FILM CAPACITOR	CFTXA682J50
	C813	AUDIO FILM CAPACITOR	CFTXA122J50
	C814	ELECTROLYTIC CAPACITOR	CENA470M50
	C816	ELECTR. CAPACITOR	CEAS470M16
	C817	CERAMIC CAPACITOR	CGCYX473K25
	C818	ELECTR. CAPACITOR	CEAS470M16
	C819	CERAMIC CAPACITOR	CGCYX473K25
	C820	ELECTR. CAPACITOR	CEAS470M16
	C821	CERAMIC CAPACITOR	CGCYX473K25
	C822, 823	CERAMIC CAPACITOR	CCCSL471J50
	C901	ELECTR. CAPACITOR	RCH1036
	C902	ELECTR. CAPACITOR	RCH1059
	C903, 904	ELECTROLYTIC CAPACITOR	CENA471M25
	C905	CERAMIC CAPACITOR	CGCYF104Z25
	C906	ELECTROLYTIC CAPACITOR	CENA220M50
	C907	CERAMIC CAPACITOR	CGCYF104Z25
	C908	ELECTROLYTIC CAPACITOR	CENA220M50
	C910	CERAMIC CAPACITOR	CGCYF104Z25
	C911	ELECTR. CAPACITOR	CEAS100M50
	C912	CERAMIC CAPACITOR	CGCYF104Z25
	C913	ELECTR. CAPACITOR	CEAS470M16
	C914	CERAMIC CAPACITOR	CGCYF104Z25
	C915	ELECTR. CAPACITOR	CEAS470M16
	C916	CERAMIC CAPACITOR	CGCYX473K25
	C917	ELECTR. CAPACITOR	CEAS470M16
	C918	CERAMIC CAPACITOR	CGCYF104Z25
	C919, 920	ELECTROLYTIC CAPACITOR	CENA471M25
	C921	CERAMIC CAPACITOR	CCCCH270J50
	C922	CERAMIC CAPACITOR	CCCCH220J50
	C923, 924	ELECTROLYTIC CAPACITOR	CENA220M50
	C925	CERAMIC CAPACITOR	CCCCH101J50
	C926	CERAMIC CAPACITOR	CCDCH101J50

RESISTORS

	VR501, 504	VR	RCP1047
⚠	R500	FUSIBLE RESISTOR	DCN1003
⚠	R501	CARBON FILM RESISTOR	RD1/2PMF222J
	R538	RESISTOR ARRAY (47K)	RCX1047
	R558	RESISTOR ARRAY (10K)	RCX1048
	R562, 563	METALFILM RESISTOR	RN1/6PQ4701F
	R584	RESISTOR ARRAY (10K)	RCX1048
⚠	R587	CARBON FILM RESISTOR	RD1/2PMF010J
	R590	RESISTOR ARRAY (47K)	RCX1047
⚠	R602, 609	CARBON FILM RESISTOR	RD1/2PMFR47J
	R701	CARBON FILM RESISTOR	RDR1/4PM103J
	R702	CARBON FILM RESISTOR	RDR1/4PM510J
	R710	CARBON FILM RESISTOR	RDR1/4PM561J
	R711, 712	CARBON FILM RESISTOR	RDR1/4PM122J
	R713	CARBON FILM RESISTOR	RDR1/4PM182J

Mark No.	Description	Parts No.
R714	CARBON FILM RESISTOR	RDR1/4PM273J
R715, 716	CARBON FILM RESISTOR	RDR1/4PM471J
R717	CARBON FILM RESISTOR	RDR1/4PM273J
R801	CARBON FILM RESISTOR	RDR1/4PM103J
R802	CARBON FILM RESISTOR	RDR1/4PM510J
R810	CARBON FILM RESISTOR	RDR1/4PM561J
R811, 812	CARBON FILM RESISTOR	RDR1/4PM122J
R813	CARBON FILM RESISTOR	RDR1/4PM182J
R814	CARBON FILM RESISTOR	RDR1/4PM273J
R815, 816	CARBON FILM RESISTOR	RDR1/4PM471J
R817	CARBON FILM RESISTOR	RDR1/4PM273J
R902	CARBON FILM RESISTOR	RD1/2PM560J
R903	CARBON FILM RESISTOR	RD1/2PM102J
	Other resistors	RD1/6PM□□□J
OTHERS		
CN15	CONNECTOR (7P)	KPC7
CN18	KR CONNECTOR	B12B-PH-K-S
CN3	FPC CONNECTOR	5597-15CPB
CN4	FPC CONNECTOR	5597-15CPB
CN5	FPC CONNECTOR	5597-13CPB
JA501	OPTICAL SENSOR MODULE	TORX178
JA502	OPTICAL OUTPUT MODULE	TOTX178
JA503	JACK	RKB1027
JA504	JACK	RKB1021
JA901	JACK	RKB1026
X501	CRYSTAL RESONATOR 18M	RSS1037
X502	CRYSTAL RESONATOR 49M	RSS1036
X901	CRYSTAL RESONATOR 22M	RSS1035

MASTER VR 1 UNIT

SEMICONDUCTORS		
IC1101	DUAL OP AMP IC	M5238P
CAPACITORS		
C1101-1104	ELECTROLYTIC CAPACITOR	CENA220M50

Mark No.	Description	Parts No.
RESISTORS		
VR1101	VARIABLE RESISTOR	RCV1073
	Other resistors	RDR1/4PM□□□J
OTHERS		
JA1101	JACK	RKB1026

AC-SW UNIT

SWITCHES		
⚠ S401	SWITCH	RSA-063
COIL		
⚠ L401	FILTER	VTL-264
CAPACITORS		
⚠ C401-403	CAPACITOR (CERAMIC)	RCG-009

IC UNIT

SEMICONDUCTORS		
⚠ IC1502	REGULATOR IC	NJM78M05FA
⚠ IC1501	REGULATOR IC	NJM7809FA

6. ADJUSTMENTS

Before adjusting, make sure that :

1. The head and tape running surfaces (tape guide, drum, capstan shaft, pinch roller) are clean.
2. The set has warmed-up a few minutes.
3. The signal level is 0dBv = 1Vrms.
4. A 10kΩ load resistance is connected to the audio system line output terminal.
5. The oscilloscope probe is 10 : 1.

Test Tape

Tracking tape :	SDA-101 (TY-7251)
Level tape :	SDA-102 (TY-7111)
Torque meter FWD :	SDA-104 (TW-7131)
Blank tape :	SDA-302

Adjustments

● Mechanical System Section

1. Back Tension Torque Adjustment
2. Tape Pass Confirmation
3. Tape pass adjustment

● Electrical System Section

1. ATF Recording Current Adjustment
2. TACH Adjustment
3. Error Rate Adjustment

How to Enter the Test Modes

(1) 1.5TP Test Mode

1. Set TIMER SW to PLAY.
2. Press the counter RESET key while pressing the MUTE key.
3. At this time, confirm that the counter display shows "ADJ".
   To cancel this test mode, set the TIMER SW to OFF or press the CHECK key.

Setting the 2/3 Waveform

1. Activate the 1.5TP test mode.
2. Set the INPUT SELECTOR SW to ANALOG. (Forward direction, 2/3 waveform)
3. Check the reproduced waveform. If tracking does not match or is not stable, use the MS + (plus) key and − (minus) key to search for the point at which tracking is stable.
   If the tracking gets worse during searching (in comparison with the initial condition), press the PEAK RESET key and readjust the tracking using the MS + and − keys.

(2) Recording Current Adjusting Test Mode

1. Set the TIMER SW to PLAY.
2. Set the INPUT SELECTOR to ANALOG.
3. Press the MODE key while holding down the MUTE key.
4. Confirm that the P-NO display on the FL tube shows "db".
   To cancel the test mode, press the CHECK key.

Preparations Before Adjustment

1. Remove the bonnet cover.
2. Remove the cassette installation unit and the DAT mechanical unit. (See the section for removing the DAT mechanical unit on page 11.) At this time, do not disconnect the flexible PCB coming out of the DAT mechanical unit from its connector and tighten one screw of the shield case to fix the DAT mechanical unit as shown in Fig. 6-1.
   The mechanical parts can now be adjusted.

Note :
When re-installing the cassette installation unit, after mounting the unit while the cassette entry door on the front panel is open, tighten the five screws. Confirm that the door will smoothly open and close by moving the arm attached to the unit up and down. (See Fig. 6-2.)

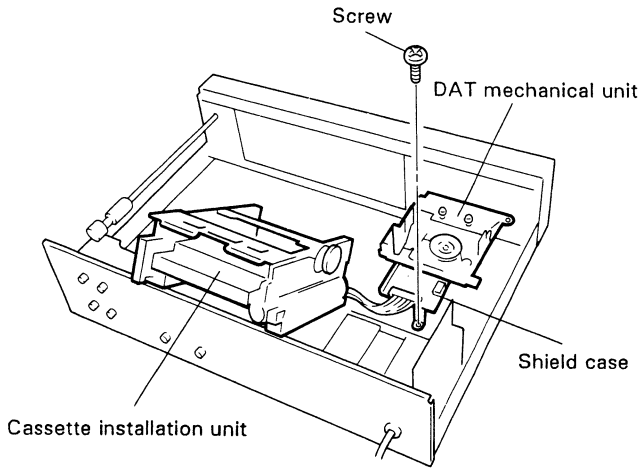


Fig. 6-1

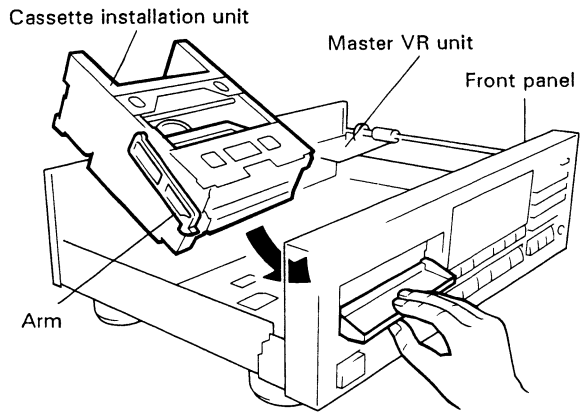


Fig. 6-2

● Preparation for Inspecting the Main Unit

1. Loosen and remove the snap ring from the volume shaft, and pull out the shaft.
2. Remove the flat cable from the three connectors, loosen and remove the nine screws from the rear panel and one screw from the volume holder, and remove the rear panel.
3. Loosen and remove the nine screws fixing the main unit and stand the main unit board as shown in Fig. 6-3.

Note :
- *For analog recording, remove the master VR unit from the rear panel and connect the flat cable from the master VR unit to CN15. To use the balance VR or headphone, connect the cable to CN16 or CN14, respectively.*
- *To operate this unit with the MAIN unit in an upright position, connect the ground points ①, ② and ③ shown in the figure below to the chassis. To use the master VR unit, connect also the ground point ④ to the chassis.*

Note for re-assembly :
First install the master VR unit in the rear panel, then install the rear panel in the chassis.

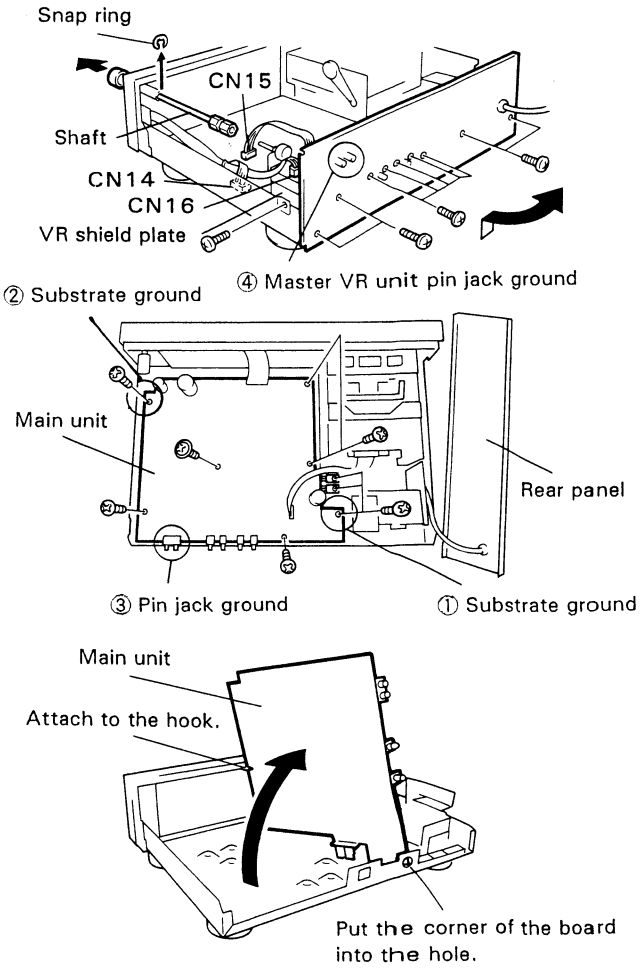


Fig. 6-3

6.1 ADJUSTING THE MECHANICAL SYSTEM SECTION

1. Adjusting The Back Tension Torque

Purpose : To stabilize the tape contact with the rotating drum head.
Symptoms in cases of poor adjustment : Small torque → Tape running is unstable.
Large torque → Tape or head is damaged.

Measuring instrument/jig	Measuring instrument connecting section	DAT state	Section to be adjusted
• Torque meter FWD : SDA-104 (TW-7131) • DAT Cassette weight : R-2606		• PLAY mode	• Spring hook part of the reel base

Adjustment Procedure

Preparation

- Mount the torque meter FWD (SDA-104). (At this time, attach the cassette weight to prevent the tape from moving up.)

1. Press the PLAY key and confirm that the center value of the back tension torque is 6.5 to 9.5g•cm. If the value is out of the specification, adjust positions A to C in the spring hook part of the reel base.

Adjustment diagram

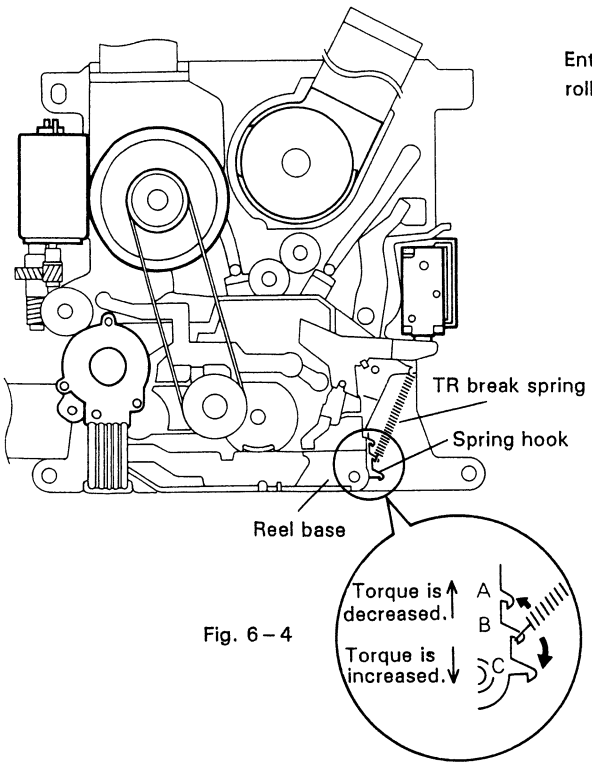


Fig. 6-4

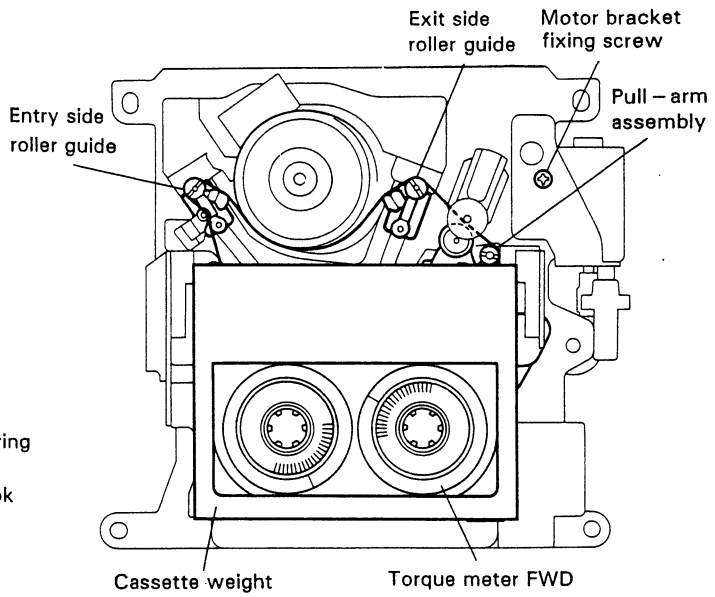


Fig. 6-5

2. Tape Pass Confirmation

Purpose : To confirm that tape runs correctly along the leading edge of the drum assembly. (Tape running adjustment)
Symptoms in cases of poor adjustment : Sound is interrupted, noise is generated, or sound quality is decreased.

Measuring instrument/jig	Measuring instrument connecting section	DAT state	Section to be adjusted
● Oscilloscope ● Test tape Tracking : SDA-101 (TY-7251) ● DAT Cassette weight : R-2606	● Oscilloscope In RF unit, CH1 : Between EQOUT (TP201) and RF shield case In main unit, CH2 : Between DREF (CN19-2) and DGND (CN19-1)	● PLAY mode (test mode)	● Waveform check

Adjustment Procedure

Preparation

- Mount the tracking tape (SDA-101). (At this time, attach the cassette weight on the tape.)
- After setting the 1.5 TP test mode, set the 2/3 waveform and play the tape. (See page 36.)

1. Check the waveform using the oscilloscope and confirm that flatness is 75% or more. (At this time, play the tape after confirming that the RECG3 hole of the test tape is open.)
2. If the flatness is less than 75% at this time, execute the tape pass adjustment (page 41).

● Flatness = B/A × 100 [%]

Adjustment diagram

Note :
Confirm the hole is open.
(RECG3 : 1.5 TP tape)

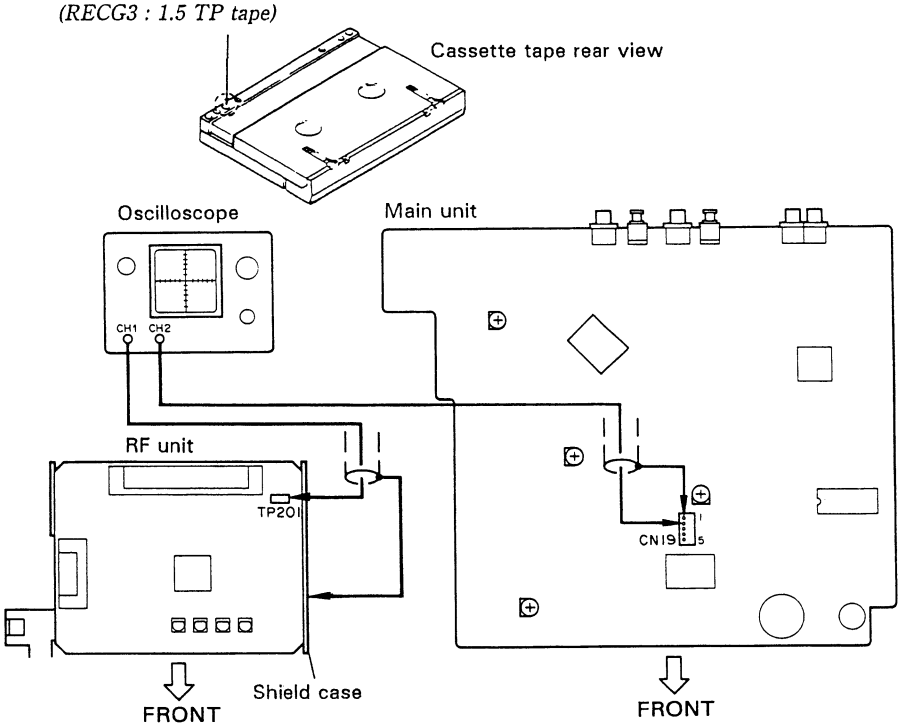


Fig. 6-6

Waveform

- Oscilloscope range :
  50mV/div, 1mS/div

Normal

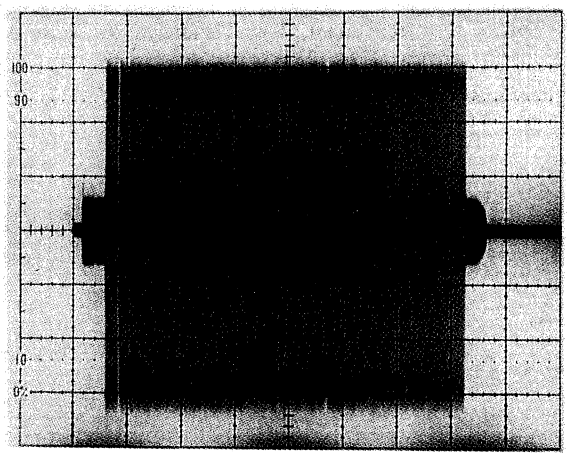


Photo 6 – 1

Fault on the entry side

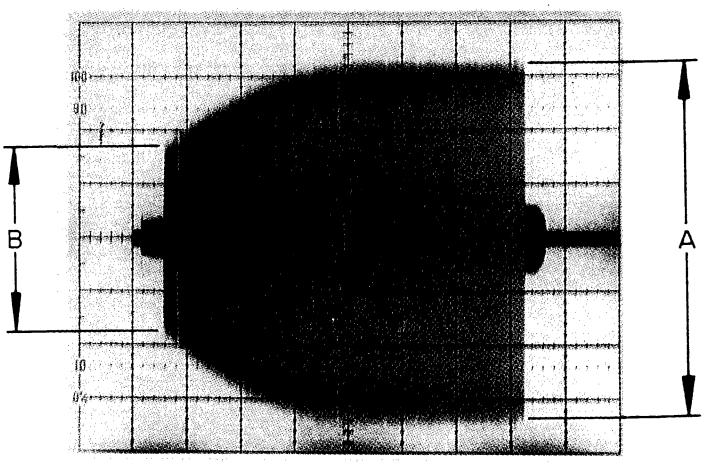


Photo 6 – 2

Fault on the exit side

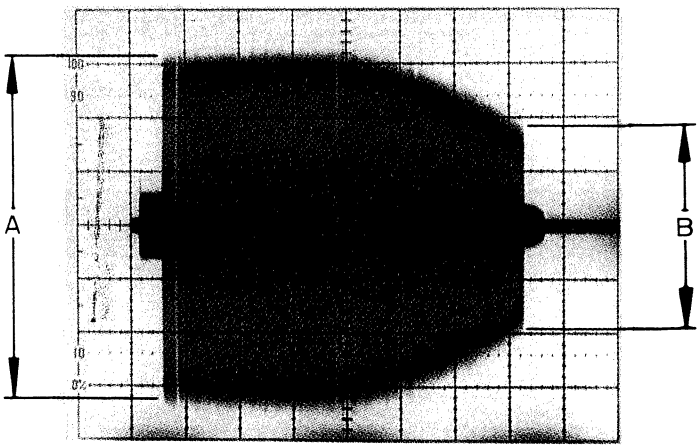


Photo 6 – 3

3. Tape Pass Adjustment

Purpose : To make tape run correctly along the leading edge of the drum assembly, (Tape running adjustment)
Symptoms in cases of poor adjustment : Sound is interrupted, noise is generated, or sound quality is decreased.

Measuring instrument/jig	Measuring instrument connecting section	DAT state	Section to be adjusted
• Oscilloscope • Test tape Tracking : SDA-101 (TY-7251) • Pin screwdriver : R-1784 • 0-bit Phillips screwdriver • DAT Cassette weight : R-2606	• Oscilloscope In RF unit, CH1 : Between EQOUT (TP201) and RF shield case In main unit, CH2 : Between DREF (CN19-2) and DGND (CN19-1)	• PLAY mode	• Roller guide (entry side, exit side) • Pull guide

Adjustment Procedure

3.1 Coarse adjustment of each guide

1. After rotating the roller guides on the entry and exit sides clockwise (using the pin screwdriver (R-1784)) until the guides slightly touch the end, rotate the guides in the reverse direction about one rotation.
2. Rotate the guide flange to the point at which the guide flange top face of the pull-arm assembly matches the upper end of the pull-arm shaft. (See Fig. 6-7.)

3.2 Fine adjustment of the roller guide height

Preparation

- Mount the tracking tape (SDA-101). (Attach the cassette weight on the tape.)
- After setting the 1.5TP test mode, set the 2/3 waveform and play the tape. (See page 36.)
- Confirm that the RECG3 hole of the test tape is open. (See Fig. 6-8.)

[Exit Side Adjustment]

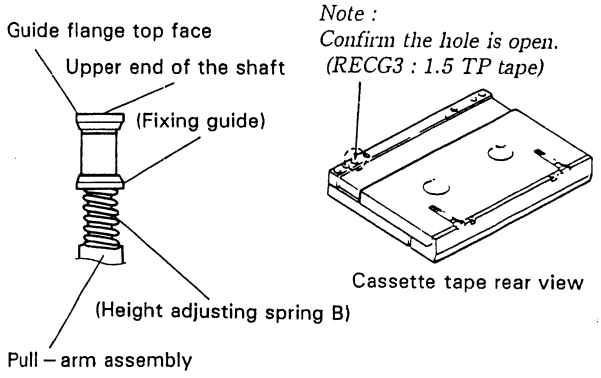
1. Check the RF waveform. Photo 6-7, tighten the roller guide on the exit side (about 1/8 rotation). Photo 6-9, loosen the roller guide on the exit side (about 1/8 rotation).

[Entry Side Adjustment]

2. Check the RF waveform. Photo 6-6, tighten the roller guide on the entry side (about 1/4 rotation). Photo 6-8, loosen the roller guide on the entry side (about 1/4 rotation).
3. Observe the RF waveform and repeat Steps 1 and 2 until the RF waveform matches Photo 6-5.
4. Press the OPEN/CLOSE key to eject the tape, and execute the tape pass confirmation procedure (page 39) again.

Adjustment diagram

- Connections of the oscilloscope, etc., are the same as in Section 2, Tape Pass Confirmation (page 39).



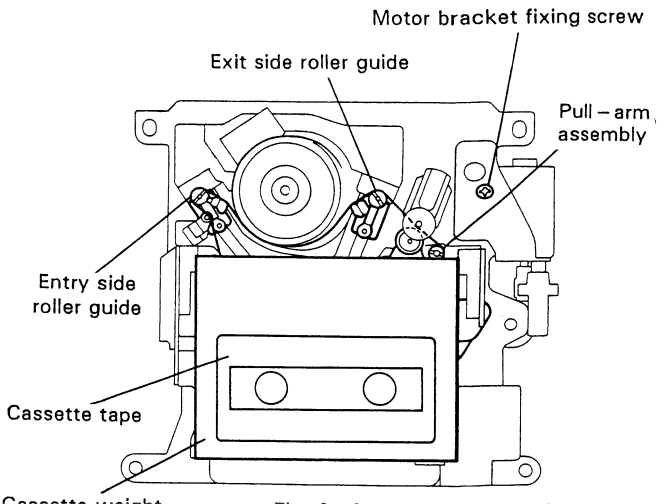


Fig. 6-7 Cassette weight

3.3 Pull – guide fine adjustment

1. Play tape and set the CUE mode by continuously pressing the FF/CUE key when the tape starts winding. Observe the tape torsion between the pinch roller and pull – guide by viewing the image of the head of the screw fixing the motor bracket reflected on the magnetic surface of the tape. The relationship between the reflected image of the screw head and pull – guide flange height is shown in Fig. 6 – 10.
2. Slowly tighten the pull – guide flange 180 degrees from the position where the coarse adjustment was performed. Confirm that the reflected image changes from c to a in the process of tightening.
3. On the contrary, loosen the pull – guide flange 180 degrees and confirm that the reflected image changes from a to c in the process of loosening.
4. Tighten the pull – guide flange to the b condition in which the upper edge of the tape curls slightly, and then loosen it 90 degrees.
5. Keep pressing the REW/REV key to set the REW mode and confirm that the tape does not curl in sections A and B in Fig. 6 – 11.
6. After confirming that no torsion appears on the tape in section C in Fig. 6 – 12, check the torsion and bulge (convex shape) in section D. (Normally, the bulge is 0.5mm or less.)
7. After pressing the OPEN/CLOSE key to eject the tape, play the tape again, keep pressing the FF/CUE key, and observe again the reflected image of the screw head to confirm that it is in the c condition.
8. Keep pressing the REW/REV key and confirm that curl and torsion in sections A to D are the same.
9. Apply a locking glue to the screw on the top face of the pull – guide flange and lock the screw.

Adjustment diagram

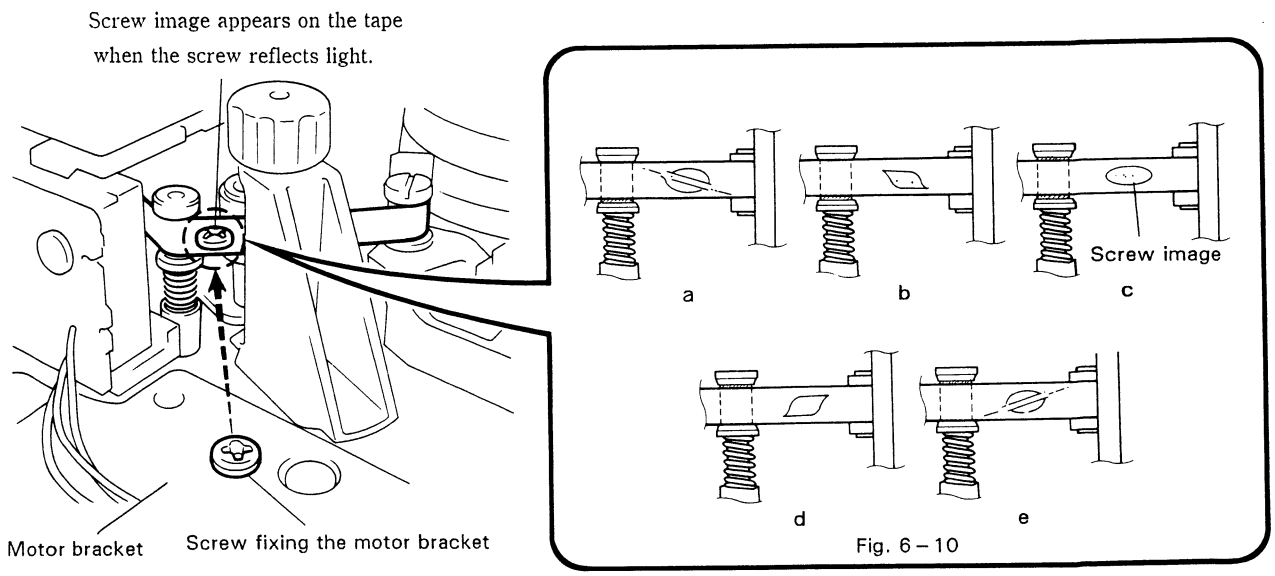


Fig. 6 – 10

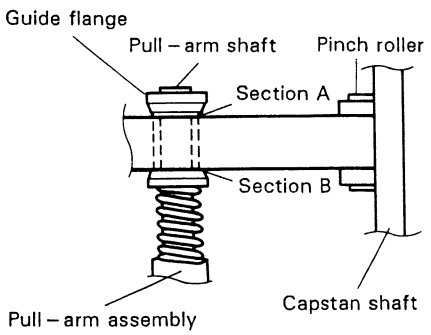


Fig. 6 – 11

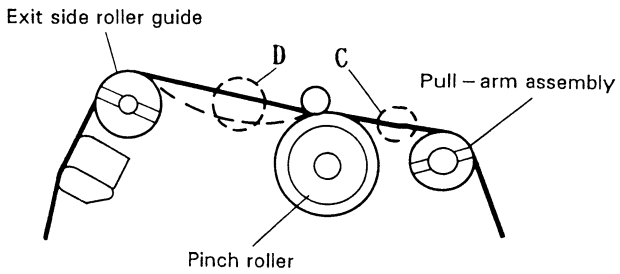


Fig. 6 – 12

6.2 ADJUSTING THE ELECTRICAL SYSTEM SECTION

1. Adjusting ATF Recording Current

Purpose : To adjust the optimum recording current.
Symptoms in cases of poor adjustment : Sound interrupted (tracking cannot be matched.), noise.

Measuring instrument/jig	Measuring instrument connecting section	DAT state	Section to be adjusted
● Oscilloscope ● Test tape Level : SDA-102 (TY-7111) Blank : SDA-302 *Note :* *Use an unused part in which the RF signal is not recorded.*	● Oscilloscope In main unit, CH1 : Between PLENV (CN19-3) and DGND (CN19-1) CH2 : Between DREF (CN19-2) and DGND (CN19-1)	● PLAY and REC modes	● In RF unit VR203 (head A) VR204 (head B)

Adjustment Procedure

Preparation

- Set the test mode for recording current adjustment. (See page 36.)

1. Play the level test tape (SDA-102), measure and record the voltage in sections a and b of the waveform in Photo 6-10.
2. Confirm the blank tape (SDA-302) is unused or has an unused portion. Press the REC key and then PAUSE key so that the signal from the integral transmitter in the machine will be recorded for 30 to 60 seconds.
3. After recording is stopped, rewind the part recorded in Step 2, and confirm that the levels of the reproduced waveforms are within the range of + 25% and − 20% of levels a and b recorded in Step 1. (See Photo 6-11.)
4. If the levels are out of the range in Step 3, slightly rotate VR203 for head A and VR204 for head B, and record the signal again on the unused part of the blank tape. Then, execute Step 3.
5. Repeat Steps 3 and 4 until the levels are in the range specified in Step 3.

Adjustment diagram

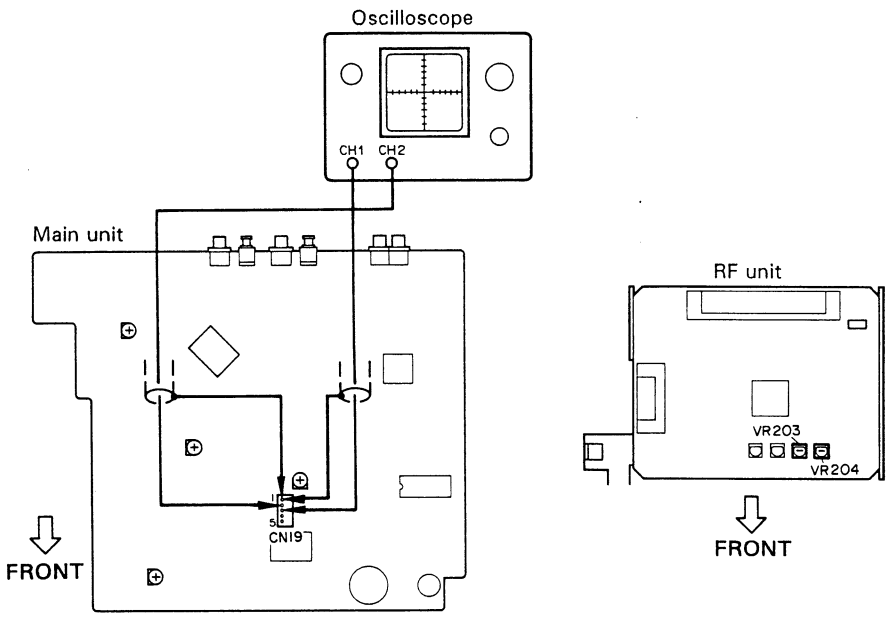


Fig. 6-13

Waveform

Oscilloscope range
CH1 : 0.5V/div, 2.5mS/div
CH2 : 5V/div

During playback of level tape (SDA – 102)

CH1
CN19 – 3 ①
PLENV

CH2
CN19 – 2 ②
DREF

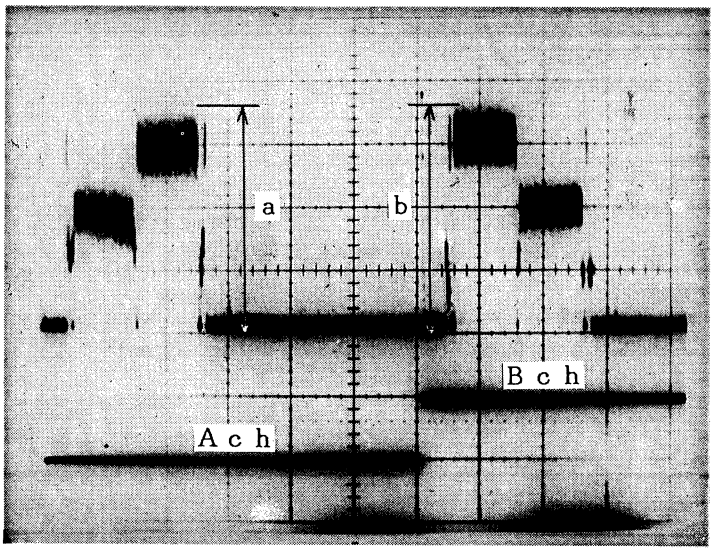


Photo 6 – 10

During playback of self – recorded blank tape

CH1
CN19 – 3 ①
PLENV

CH2
CN19 – 2 ②
DREF

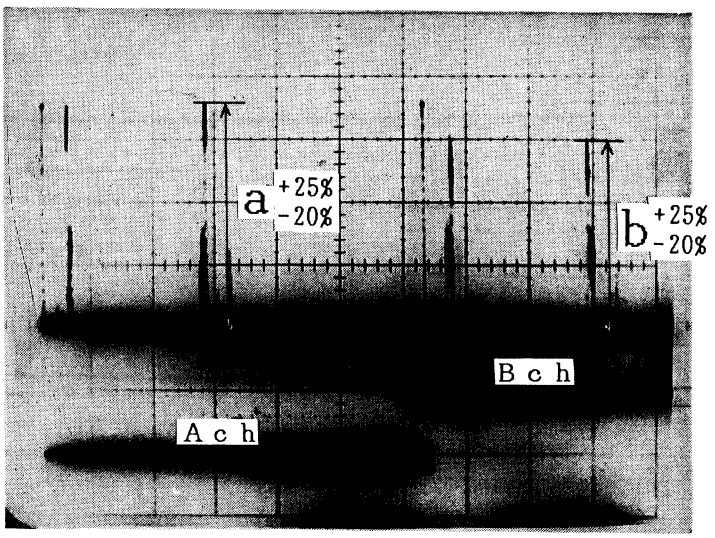


Photo 6 – 11

2. Adjusting TACH

Purpose : To match the recording position to the tape format.
Symptoms in cases of poor adjustment : Sound from the tape recorded with another machine is interrupted (no problem with self-recording) or noise is increased to mute the recorded sound.

Measuring instrument/jig	Measuring instrument connecting section	DAT state	Section to be adjusted
● Oscilloscope ● Test tape Tracking : SDA-101 (TY-7251)	● Oscilloscope In RF unit, CH1 : Between EQOUT (TP201) and RF shield case In main unit, CH2 : Between DREF (CN19-2) and DGND (CN19-1)	● PLAY mode (test mode)	● In main unit : VR501

Adjustment Procedure

Preparation

- Set the 1.5 TP test mode. (See page 36.)

1. Adjust so that the marker position of the RF waveform will be 650/*s*±20 starting with the trailing edge of the DREF waveform.

Waveform

- Oscilloscope range
  CH1 : 100 mV/div, 0.1 mS/div
  CH2 : 5 V/div (trigger)

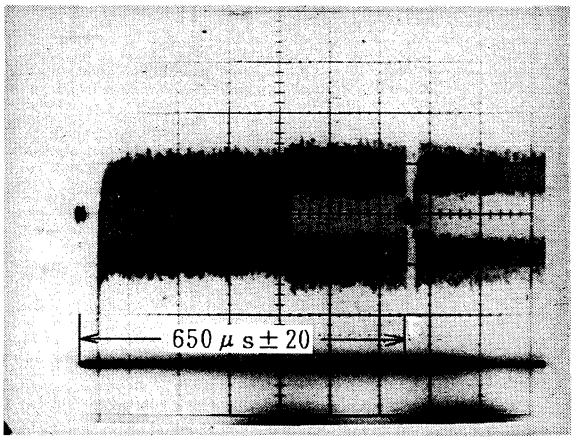


Photo 6-12

Adjustment diagram

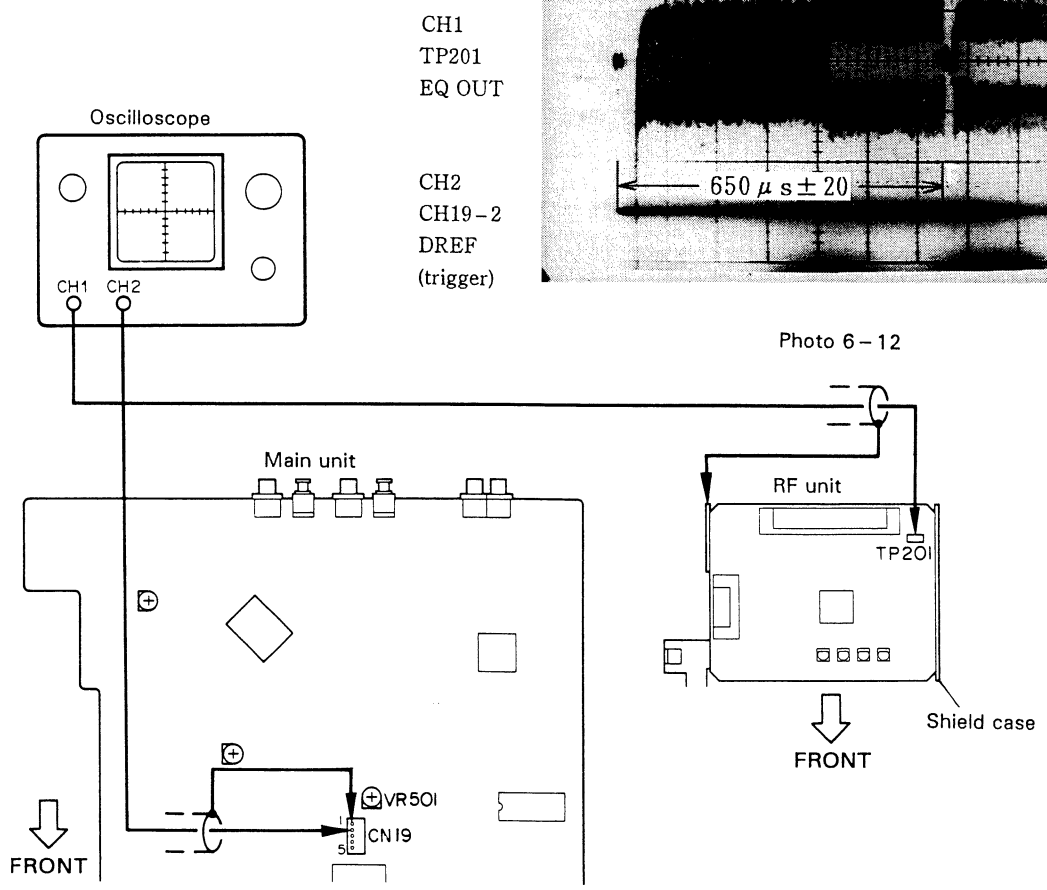


Fig. 6-14

3. Adjusting the Error Rate

Purpose : To correctly reproduce data.
Symptoms in cases of poor adjustment : Tracking does not match, running failure occurs, sound is muted, or noise is generated.

Measuring instrument/jig	Measuring instrument connecting section	DAT state	Section to be adjusted
● Oscilloscope ● Blank tape : SDA-302	● Oscilloscope In main unit, CH1 : Between SYMN (JP (ERR FLG) or IC501-33pin) and DGND (CN19-1) CH2 : Between DREF (CN19-2) and DGND (CN19-1)	● REC and PLAY modes	● In main unit : VR504

Adjustment Procedure

Preparation

- Record a music signal or a proper test signal on the blank tape (SDA-302) in SP and LP modes for about 15 seconds, respectively.

1. Play the recorded part and adjust so that the error flag appears the most (72 peaks at maximum) on the waveform of the oscilloscope as shown in Photo 6-13.

Waveform

- Oscilloscope range
  CH1 : 5 V/div, 2.5 mS/div
  CH2 :

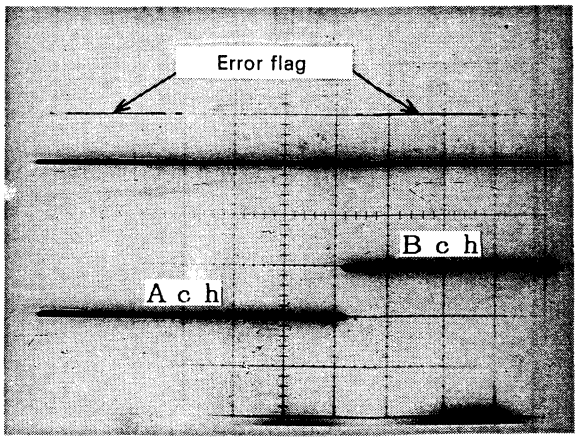


Photo 6-13

Adjustment diagram

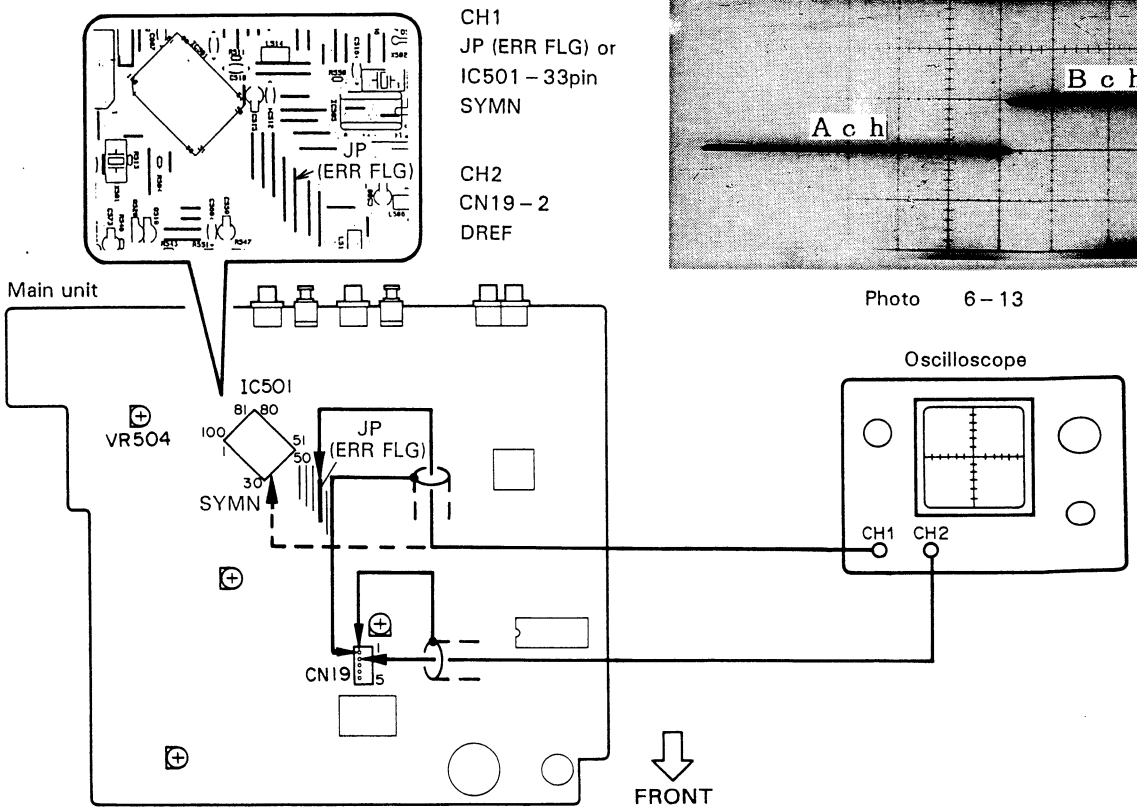


Fig. 6-15

Waveform

- Oscilloscope range
  CH1 : 5V/div, 1mS/div

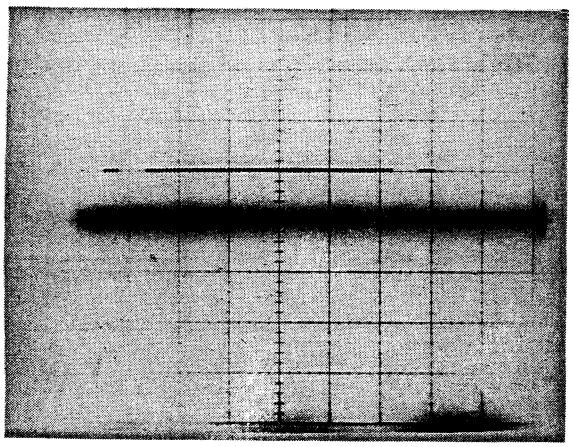


Photo 6 – 14

[Very good]
- Error rate : 1×10^{-4}
  CH1 : SYMN (JP (ERR FLG) or IC501 – 33pin)

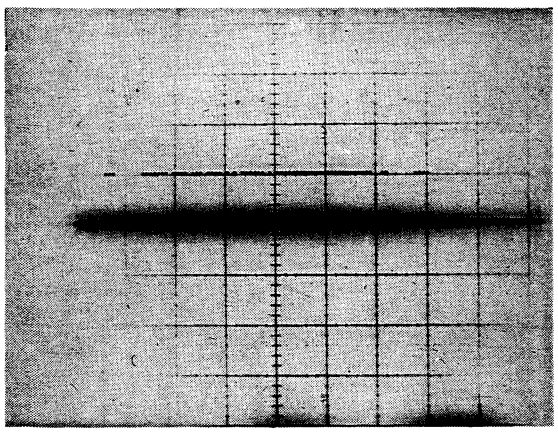


Photo 6 – 15

[Error is corrected and sound is normal]
- Error rate : 1×10^{-2}
  CH1 : SYMN (JP (ERR FLG) or IC501 – 33pin)

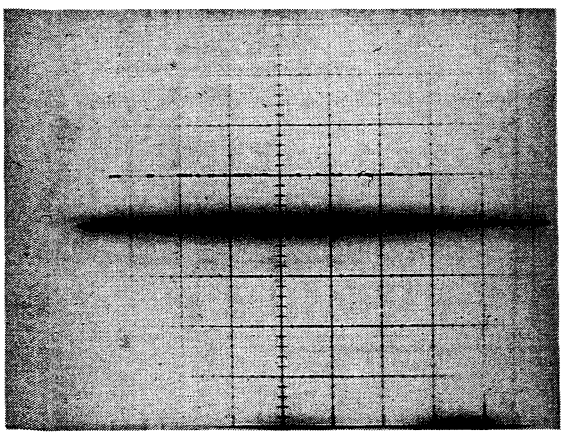


Photo 6 – 16

[Sound signal is interpolated and
abnormal when listened to carefully]
- Error rate : 1×10^{-1}
  CH1 : SYMN (JP (ERR FLG) or IC501 – 33pin)

6. REGLAGE

Avant de procéder au réglage, vérifier que :

1. La tête et les surfaces de défilement de la bande (guide de bande, tambour, arbre de cabestan, galet-presseur) sont propres.
2. L'ensemble a chauffé pendant quelques minutes.
3. Le niveau de signal est de 0 dBv = 1 V eff.
4. Une résistance de charge de 10 kohms est connectée à la borne de sortie de ligne du système audio.
5. La sonde de l'oscilloscope est 10 : 1.

Bande d'essai

Bande d'alignement :	SDA-101 (TY-7251)
Bande de niveau :	SDA-102 (TY-7111)
Compteur de couple FWD :	SDA-104 (TY-7131)
Bande vierge :	SDA-302

Réglages

● Section de système mécanique

1. Réglage du couple de tension arrière
2. Confirmation du passage de bande
3. Réglage du passage de bande

● Section de système électrique

1. Réglage du courant d'enregistrement ATF
2. Réglage du compte-tours
3. Réglage du taux d'erreur

Comment passer aux modes d'essai

(1) Mode d'essai TP 1,5

1. Régler le commutateur de minuterie sur la position "PLAY" (reproduction).
2. Appuyer sur la touche de réinitialisation (RESET) de compteur tout en appuyant sur la touche de sourdine (MUTE).
3. A ce moment, confirmer que l'affichage de compteur indique "ADJ".
   Pour annuler ce mode d'essai, régler l'interupteur d'alimentation sur la position "OFF" ou appuyer sur la touche de contrôle (CHECK).

Réglage de la forme d'onde 2/3

1. Activer le mode d'essai TP 1,5.
2. Régler le sélecteur d'entrée sur la position "ANALOG". (Direction en avant, forme d'onde 2/3)
3. Vérifier la forme d'onde reproduite. Si l'alignement ne correspond pas ou n'est pas stable, utiliser la touche + (plus) et − (moins) MS pour chercher le point auquel l'alignement est stable.
   Si l'alignement devient pire pendant la recherche (par comparaison avec la condition initiale), appuyer sur la touche de contrôle (PEAK RESET) et ré-ajuster l'alignement en utilisant les touches + et − MS.

(2) Mode d'essai de réglage du courant d'enregistrement

1. Régler le commutateur de minuterie sur la position "PLAY".
2. Régler le sélecteur d'entrée sur la position "ANALOG".
3. Appuyer sur la touche de mode (MODE) tout en maintenant la touche de sourdine (MUTE) enfoncée.
4. Confirmer que l'affichage "P-NO" sur le tube FL indique "db".
   Pour annuler le mode d'essai, appuyer sur la touche de contrôle (CHECK).

Préparations avant le réglage

1. Déposer le couvercle.
2. Déposer l'unité d'installation de cassette et l'appareil mécanique DAT. (Voir la section pour la déposer de l'appareil mécanique DAT à la page 11.) A ce moment, ne pas déconnecter la plaquette de circuits imprimés souple sortant de l'appareil mécanique DAT de son connecteur et serrer une vis sur le boîtier de blindage pour fixer l'appareil mécanique DAT de la manière indiquée dans la Figure 6-1. Les pièces mécaniques peuvent à présent être ajustées.

Note :
Lors de la remise en place de l'unité d'installation de cassette après le montage de l'appareil alors que la porte d'entrée de cassette située sur le panneau avant est ouverte, serrer les cinq vis. Confirmer que la porte s'ouvre en douceur et fermer en déplaçant le bras fixé à l'appareil vers le haut et le bas. (Voir Figure 6-2.)

● Préparations au contrôle de l'unité principale

1. Desserrer et déposer le jonc de l'arbre de volume, et sortir l'arbre.
2. Déposer le câble plat des trois connecteurs, desserrer et déposer les neuf vis du panneau arrière et une vis du support de volume, et déposer le panneau arrière.
3. Desserrer et déposer les neuf vis fixant l'unité principale et supporter celle-ci de la manière indiquée dans la Figure 6-3.

Note :
- *Pour l'enregistrement analogique, déposer l'unité de résistance variable principale du panneau arrière et connecter le câble plat de l'unité de résistance variable principale à CN15. Pour utiliser la résistance variable de balance ou le casque d'écoute, connecter respectivement le câble à CN16 ou CN14.*
- *Pour utiliser cet appareil en position verticale avec l'appareil principal, connecter les points de mise à la terre ①, ② et ③ indiqués dans la figure ci-dessous au châssis. Pour utiliser l'unité VR principale, connecter également le point de mise à la terre ④ au châssis.*

Note pour le remontage :
Reposer tout d'abord l'unité de résistance variable principale dans le panneau arrière, puis reposer le panneau arrière dans le châssis.

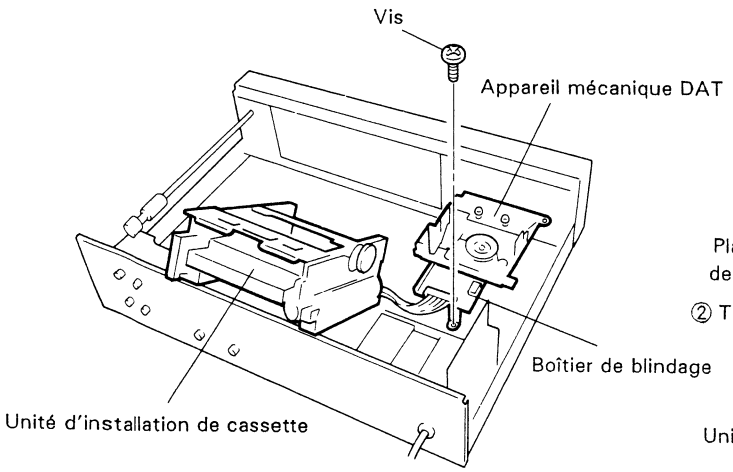


Figure 6-1

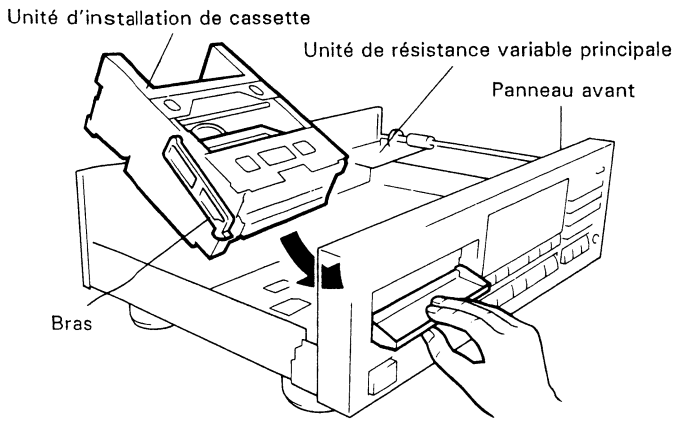
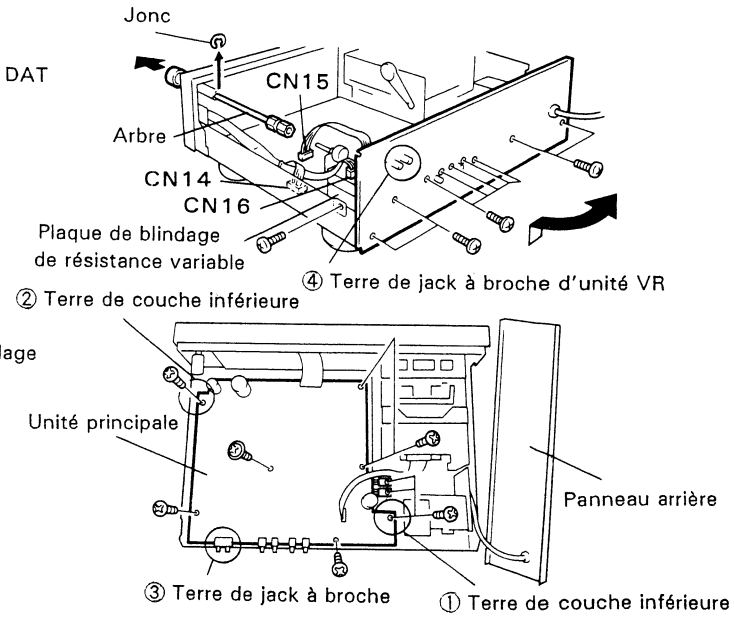


Figure 6-2



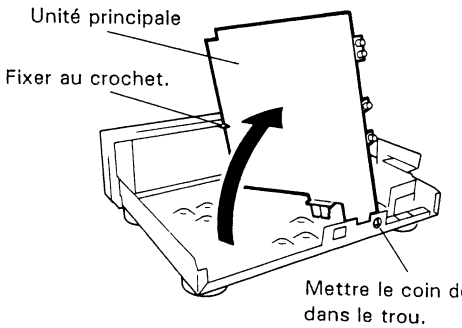


Figure 6-3

6.1 Réglage de la section de système mécanique

1.Réglage du couple de tension arrière

But : Stabiliser le contact de bande avec la tête de tambour rotative.
Symptômes en cas de mauvais ajustement : Petit couple → Le défilement de bande est instable.
Large couple → Le défilement de bande est endommagé.

Gabarit/instrument de mesure	Section de connexion d'instrument de mesure	Etat DAT	Section à ajuster
• Compteur de couple FWD : SDA-104 (TW-7131) • Poids de cassette DAT : R-2606		• Mode de reproduction (PLAY)	• Partie crochet à ressort de la base de bobine

Procédure de réglage

Préparation

- Monter le compteur de couple FWD (SDA-104). (A ce moment, fixer le poids de cassette pour empêcher la bande de se déplacer.)

1. Appuyer sur la touche de reproduction (PLAY) et confirmer que la valeur centrale du couple de tension arrière est de 6,5 à 9,5 g•cm. Si la valeur est hors spécifications, ajuster les positions A à C dans la partie crochet à ressort de la base de bobine.

Diagramme de réglage

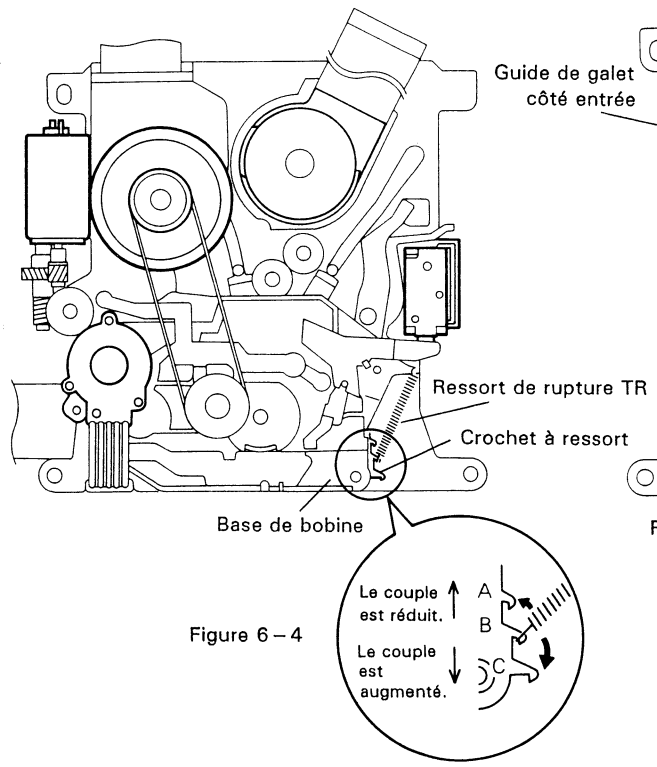


Figure 6-4

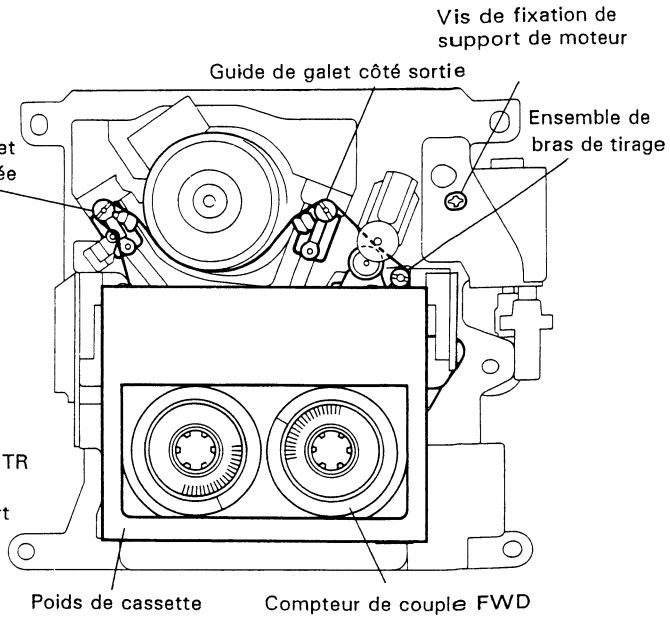


Figure 6-5

2. Confirmation du passage de bande

But : Confirmer que la bande défile correctement le long du bord de tête de l'ensemble de tambour. (Ajustement de défilement de bande)
Symptômes en cas de mauvais ajustement : Le son est interrompu, des parasites sont produits ou la qualité sonore est réduite.

Gabarit/instrument de mesure	Section de connexion d'instrument de mesure	Etat DAT	Section à ajuster
● Oscilloscope ● Bande d'essai Bande d'alignement : SDA-101 (TY-7251) ● Poids de cassette DAT : R-2606	● Oscilloscope Dans l'unité RF, CH1 : Entre EQOUT (TP201) et boîtier de blindage RF Dans l'unité principale, CH2 : Entre DREF (CN19-2) et DGND (CN19-1)	● Mode de reproduction (mode d'essai)	● Contrôle de forme d'onde

Procédure de réglage

Préparation

- Monter la bande d'alignement (SDA-101). (A ce moment, fixer le poids de cassette sur la bande.)
- Après avoir réglé le mode d'essai TP 1,5, régler la forme d'onde 2/3 et reproduire la bande. (Voir page 49.)

1. Vérifier la forme d'onde en utilisant l'oscilloscope et confirmer que la planéité est supérieure ou égale à 75%. (A ce moment, reproduire la bande après avoir confirmé que le trou RECG3 de la bande d'essai est ouvert.)
2. Si la planéité est inférieure à ce moment à 75%, exécuter l'ajustement du passage de bande (page 54).

- Planéité = B/A × 100 [%]

Diagramme de réglage

Note :
Confirmer que le trou est ouvert.
(RECG3 : Bande TP 1,5)

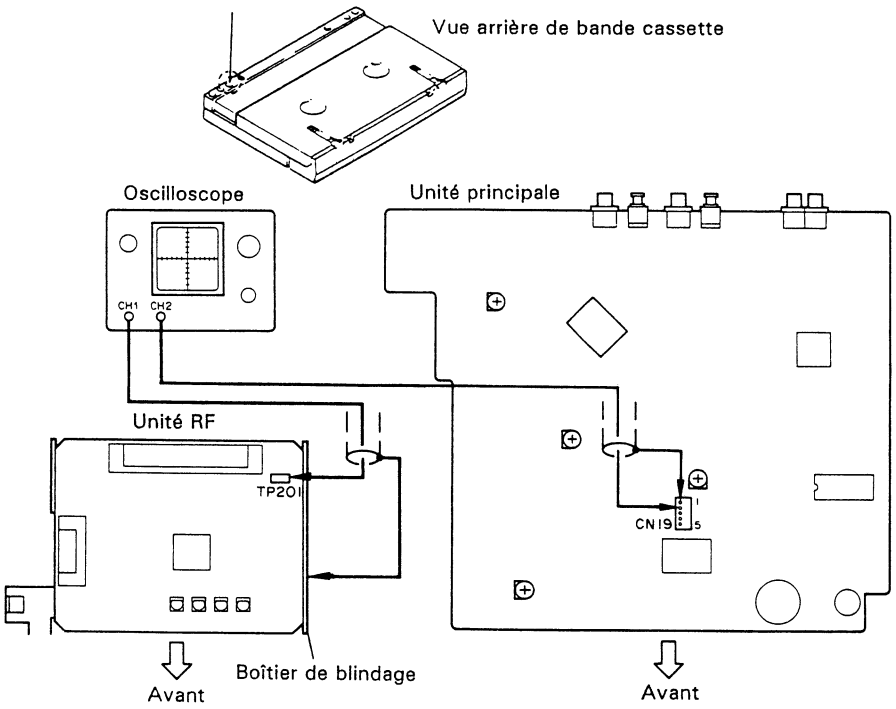


Figure 6-6

Forme d'onde

- Gamme de l'oscilloscope :
  50 mV/div, 1 mS/div

Normal

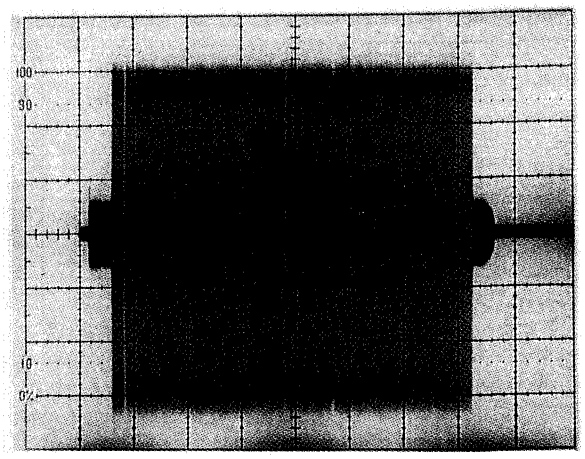


Photo 6 – 1

Défaut sur le côté entrée

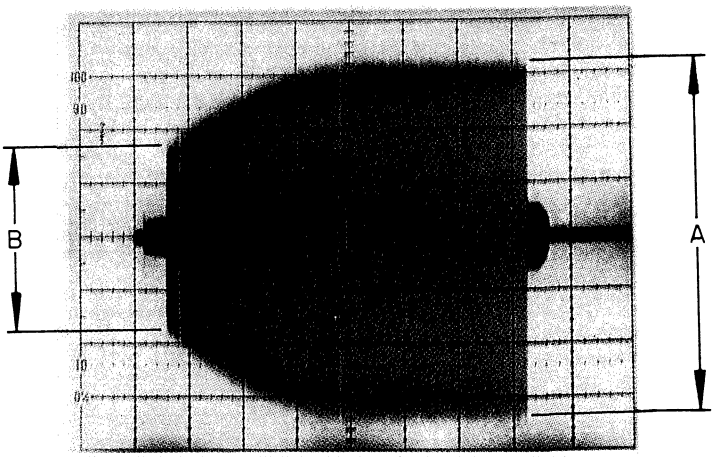


Photo 6 – 2

Défaut sur le côté sortie

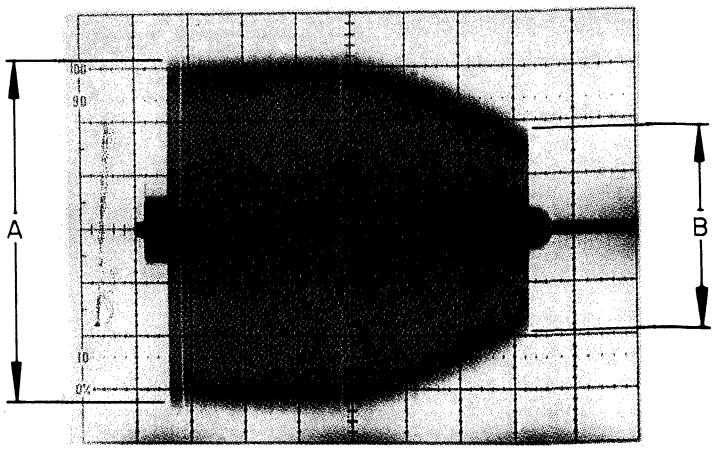


Photo 6 – 3

3. Réglage du passage de bande

But : Faire correctement défiler la bande le long du bord de tête de l'ensemble de tambour. (Ajustement de défilement de bande)
Symptômes en cas de mauvais ajustement : Le son est interrompu, des parasites sont produits ou la qualité sonore est réduite.

Gabarit/instrument de mesure	Section de connexion : d'instrument de mesure	Etat DAT	Section à ajuster
● Oscilloscope ● Bande d'essai Bande d'alignement : SDA-101 (TY-7251) ● Tournevis à axe : R-1784 ● Tournevis Phillips 0 bit ● Poids de cassette DAT : R-2606	● Oscilloscope Dans l'unité RF, CH1 : Entre EQOUT (TP201) et boîtier de blindage HF Dans l'unité principale, CH2 : Entre DREF (CN19-2) et DGND (CN19-1)	● Mode de reproduction	● Guide de galet (côté entrée, côté sortie) ● Guide de tirage

Procédure de réglage

3.1 Ajustement grossier de chaque guide

1. Après avoir fait tourner les guides de galet dans le sens des aiguilles d'une montre sur les côtés entrée et sortie (en utilisant le tournevis à axe (R-1784)) jusqu'à ce que les guides touchent légèrement l'extrémité, les faire tourner dans la direction inverse d'un tour environ.
2. Faire tourner le flasque de guide jusqu'au point auquel la face supérieure du flasque de guide de l'ensemble bras de tirage correspond à l'extrémité supérieure de l'arbre de bras de tirage. (Voir Figure 6-7.)

3.2 Ajustement fin de la hauteur de guide de galet

Préparation

- Monter la bande d'alignement (SDA-101). (Fixer le poids de cassette sur la bande.)
- Après avoir réglé le mode d'essai TP 1,5, régler la forme d'onde 2/3 et reproduire la bande. (Voir page 49.)
- Confirmer que le trou RECG3 de la bande d'essai est ouvert. (Voir Figure 6-8.)

[Ajustement côté sortie]

1. Vérifier la forme d'onde RF. Photo 6-7, serrer le guide de galet sur le côté sortie (environ 1/8 tour). Photo 6-9, desserrer le guide de galet sur le côté sortie (environ 1/8 tour).

[Ajustement côté entrée]

2. Vérifier la forme d'onde RF. Photo 6-6, serrer le guide de galet sur le côté entrée (environ 1/4 tour). Photo 6-8, desserrer le guide de galet sur le côté entrée (environ 1/4 tour).
3. Observer la forme d'onde RF et répéter les étapes 1 et 2 jusqu'à ce que la forme d'onde RF corresponde à la Photo 6-5.
4. Appuyer sur la touche d'ouverture/fermeture (OPEN/CLOSE) pour éjecter la bande et effectuer de nouveau la procédure de confirmation de passage de bande (page 52).

Diagramme de réglage

- Les connexions de l'oscilloscope, etc. sont les mêmes que dans la section 2, Confirmation du passage de bande (page 52).

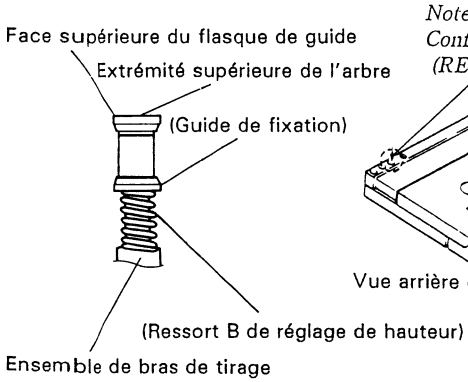


Figure 6-7

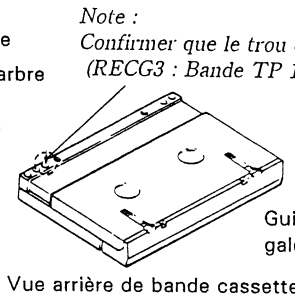


Figure 6-8

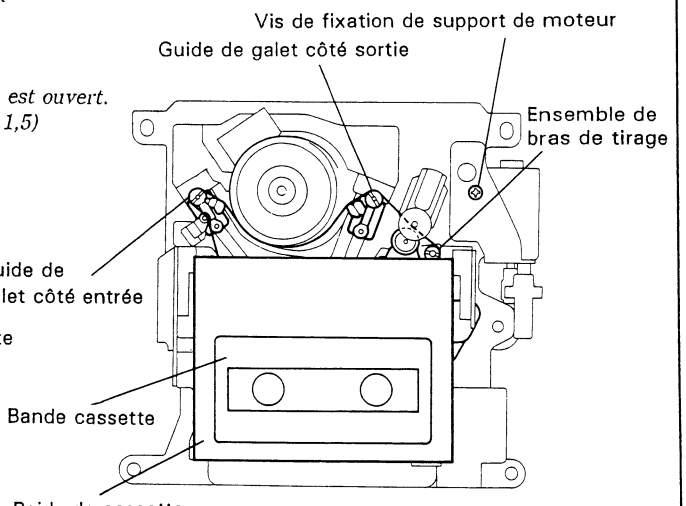


Figure 6-9

Forme d'onde

- Gamme de l'oscilloscope :
  50 mV/div, 1 mS/div

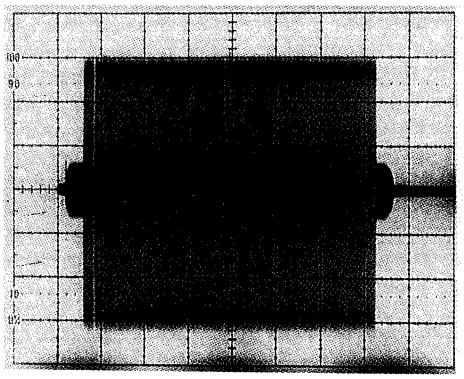


Photo 6 – 4 Niveau maximum de sortie RF

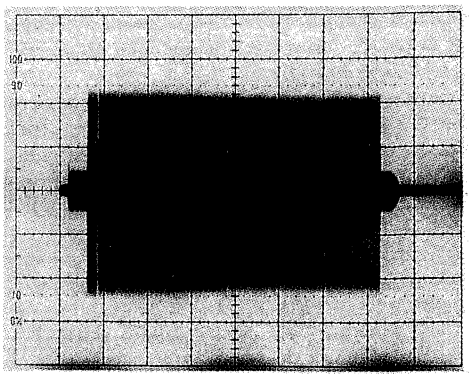


Photo 6 – 5 Niveau de sortie RF 2/3 (ajustement terminé)

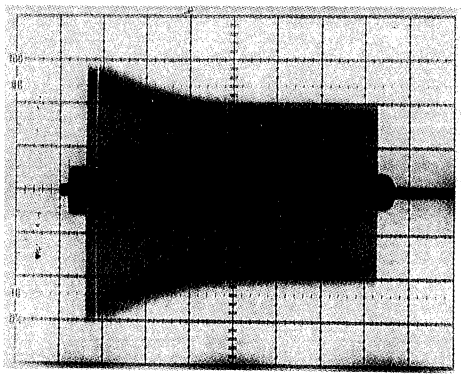


Photo 6 – 6 Galet de guide côté entrée trop relevé

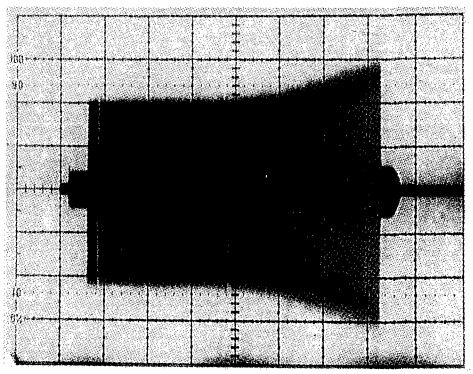


Photo 6 – 7 Galet de guide côté sortie trop relevé

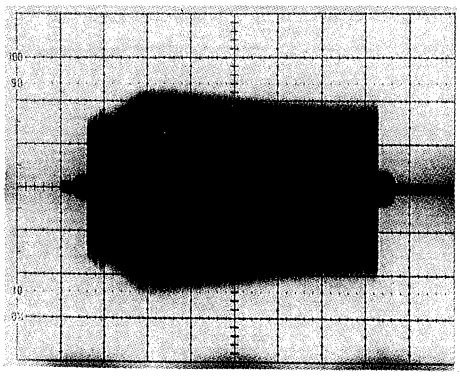


Photo 6 – 8 Galet de guide côté entrée trop baissé

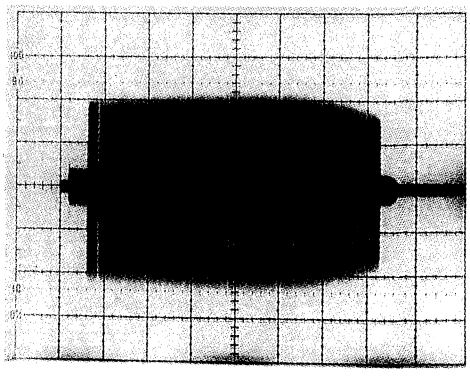


Photo 6 – 9 Galet de guide côté sortie trop baissé

3.3 Ajustement fin de guide de tirage

1. Reproduire la bande et régler le mode CUE en appuyant de manière continue sur la touche FF/CUE lorsque la bande commence à s'enrouler. Observer la torsion de la bande entre le galet-presseur et le guide de tirage en voyant l'image de la tête de la vis fixant le support de moteur réfléchie sur la surface magnétique de la bande. La relation entre l'image réfléchie de la tête de vis et la hauteur du flasque du guide de tirage est indiquée dans la Figure 6-10.
2. Serrer lentement de 180° le flasque du guide de tirage à partir de la position où a été effectué l'ajustement grossier. Confirmer que l'image réfléchie change de c à a au cours du serrage.
3. Au contraire, desserrer de 180° le flasque du guide de tirage et confirmer que l'image réfléchie change de a à c au cours du desserrage.
4. Serrer le flasque du guide de tirage à la condition b dans laquelle le bord supérieur de la bande ondule légèrement, puis le desserrer de 90°.
5. Garder la touche REW/REV enfoncée pour régler le mode REW et confirmer que la bande n'ondule pas aux sections A et B de la Figure 6-11.
6. Après avoir confirmé qu'aucune torsion n'apparaît sur la bande dans la section C de la Figure 6-12, vérifier la présence de torsion et de saillie (forme convexe) dans la section D. (Normalement, la saillie est égale ou inférieure à 0,5 mm).
7. Après avoir appuyé sur la touche d'ouverture/fermeture (OPEN/CLOSE) pour éjecter la bande, reproduire de nouveau la bande, garder la touche FF/CUE enfoncée et observer de nouveau l'image réfléchie de la tête de vis pour confirmer qu'elle est dans la condition c.
8. Garder la touche REW/REV enfoncée et confirmer que l'ondulation et la torsion aux sections A à D sont les mêmes.
9. Appliquer une colle de blocage à la vis située sur la face supérieure du flasque de guide de tirage et bloquer la vis.

Diagramme de réglage

L'image de la vis apparaît sur la bande lorsque la vis réfléchit la lumière.

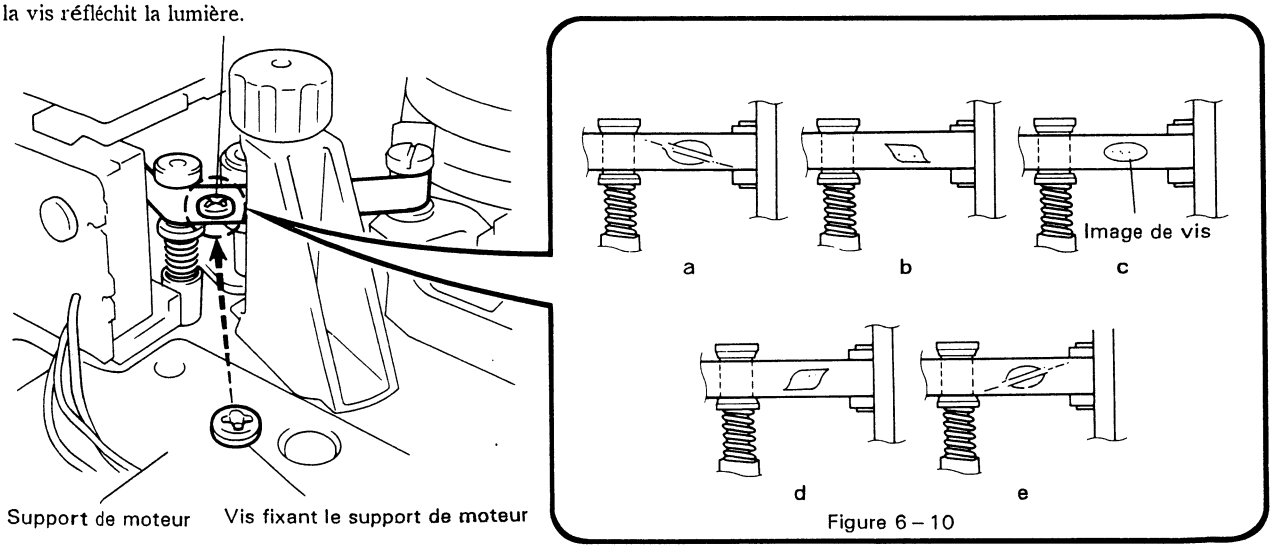


Figure 6-10

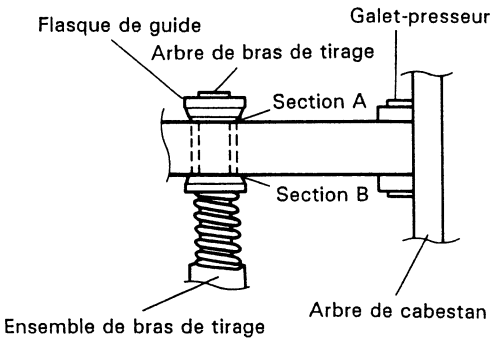


Figure 6-11

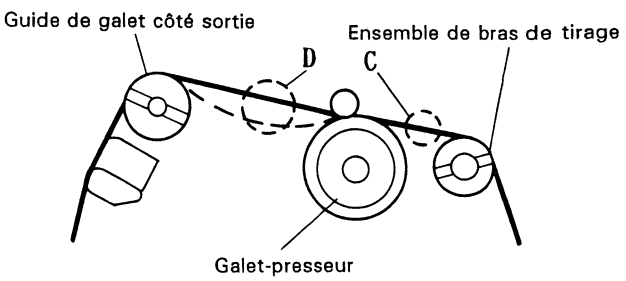


Figure 6-12

6.2 Réglage de la section de système électrique

1. Réglage du courant d'enregistrement ATF

But : Régler le courant d'enregistrement optimum.
Symptômes en cas de mauvais ajustement : Son interrompu (l'alignement ne peut pas être assorti), parasites.

Gabarit/instrument de mesure	Sectionde connexion d'instrument de mesure	Etat DAT	Section à ajuster
● Oscilloscope ● Bande d'essai Bande d'essai de niveau : SDA-102 (TY-7111) Bande vierge : SDA-302 *Note :* *Utiliser une partie inutilisée dans laquelle le signal RF n'est pas enregistré.*	● Oscilloscope Dans l'unité principale, CH1 : Entre PLENV (CN19-3) et DGND (CN19-1) CH2 : Entre DREF (CN19-2) et DGND (CN19-1)	● Mode de reproduction et d'enregistrement	● Dans unité RF VR203 (tête A) VR204 (tête B)

Procédure de réglage

Préparation

- Régler le mode d'essai pour le réglage du courant d'enregistrement. (Voir page 49.)

1. Reproduire la bande d'essai de niveau (SDA-102), mesurer et enregistrer la tension aux sections a et b de la forme d'onde dans la Photo 6-10.
2. Confirmer que la bande vierge (SDA-302) est inutilisée ou possède une portion inutilisée. Appuyer sur la touche d'enregistrement (REC), puis sur la touche de pause pour que le signal en provenance de l'émetteur intégral de la machine soit enregistré pendant 30 à 60 secondes.
3. Après l'arrêt de l'enregistrement, rembobiner la partie enregistrée à l'étape 2 et confirmer que les niveaux des formes d'onde reproduites se trouvent dans la gamme de +25% et −20% des niveaux a et b enregistrés à l'étape 1. (Voir Photo 6-11.)
4. Si les niveaux sont hors de la gamme de l'étape 3, faire légèrement tourner VR203 pour la tête A et VR204 pour la tête B, et enregistrer de nouveau le signal sur la partie inutilisée de la bande vierge. Exécuter ensuite l'étape 3.
5. Répéter les étapes 3 et 4 jusqu'à ce que les niveaux se trouvent dans la gamme spécifiée à l'étape 3.

Diagramme de réglage

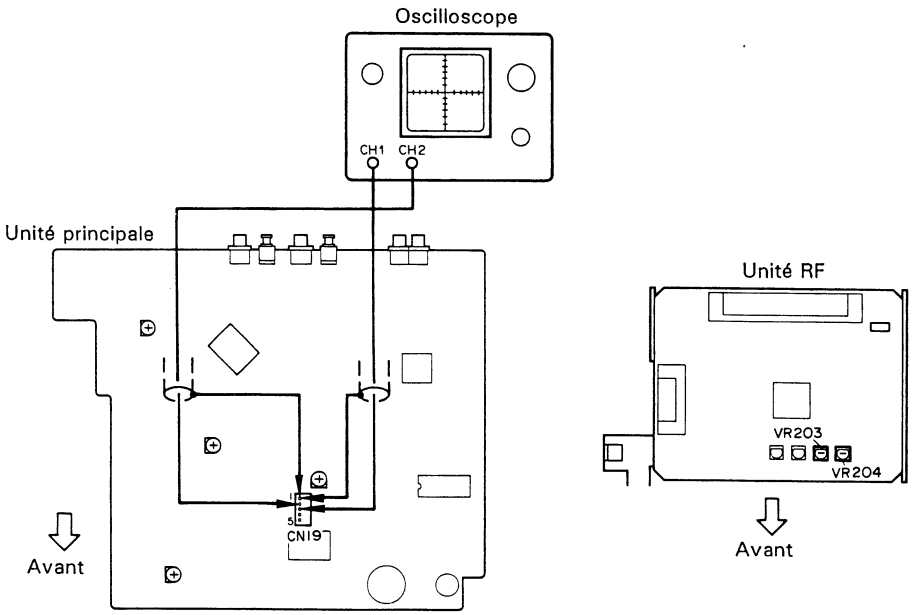


Figure 6-13

Forme d'onde

Gamme de l'oscilloscope
CH1 : 0,5 V/div, 2,5 mS/div
CH2 : 5 V/div

Pendant reproduction de bande de niveau (SDA-102)

CH1
CN19-3
PLENV
①

CH2
CN19-2
DREF
②

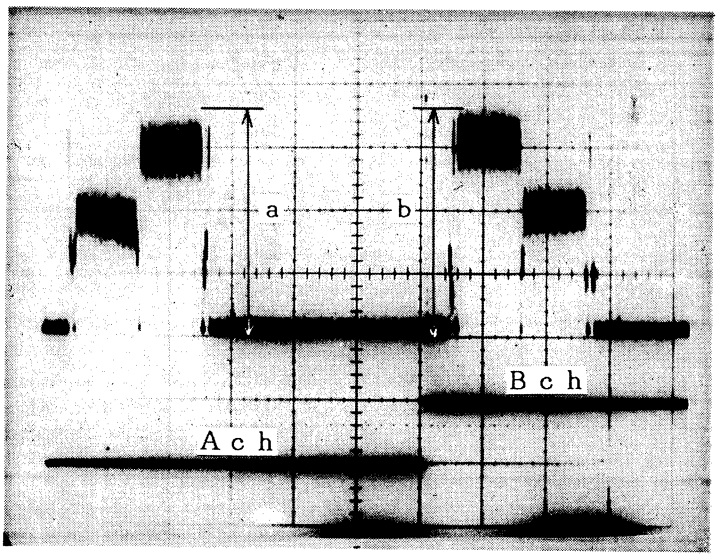


Photo 6 – 10

Pendant reproduction de bande vierge auto-enregistrée

CH1
CN19-3
PLENV
①

CH2
CN19-2
DREF
②

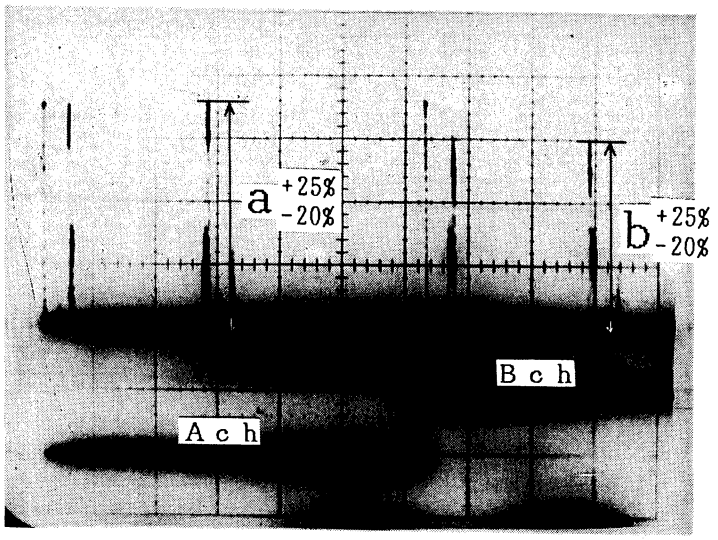


Photo 6 – 11

2. Réglage du compte-tours

But : Faire correspondre la position d'enregistrement au format de bande.
Symptômes en cas de mauvais ajustement : Le son de la bande enregistrée avec une autre machine est interrompu (pas de problème avec l'enregistrement automatique) ou les parasites sont augmentés pour mettre en sourdine le son enregistré.

Gabarit/instrument de mesure	Section de connexion d'instrument de mesure	Etat DAT	Section à ajuster
● Oscilloscope ● Bande d'essai Bande d'alignement : SDA-101 (TY-7251)	● Oscilloscope Dans l'unité RF, CH1 : Entre EQOUT (TP201) et boîtier de blindage RF Dans l'unité principale, CH2 : Entre DREF (CN19-2) et DGND (CN19-1)	● Mode de reproduction (mode d'essai)	● Dans unité principale : VR501

Procédure de réglage

Préparation

- Régler le mode d'essai TP 1,5. (Voir page 49.)

1. Ajuster pour que la position de repère de la forme d'onde RF soit de 650 μs ±20 en commençant par le bord arrière de la forme d'onde DREF.

Forme d'onde

- Gamme de l'oscilloscope
  CH1 : 100 mV/div, 0,1 mS/div
  CH2 : 5 V/div (déclencheur)

Diagramme de réglage

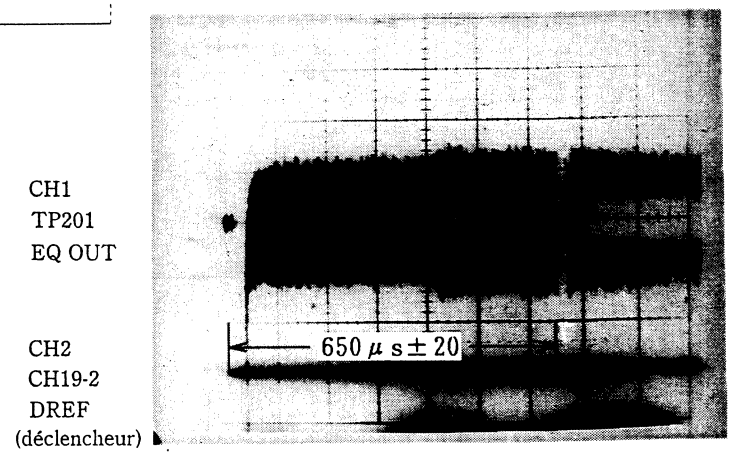


Photo 6-12

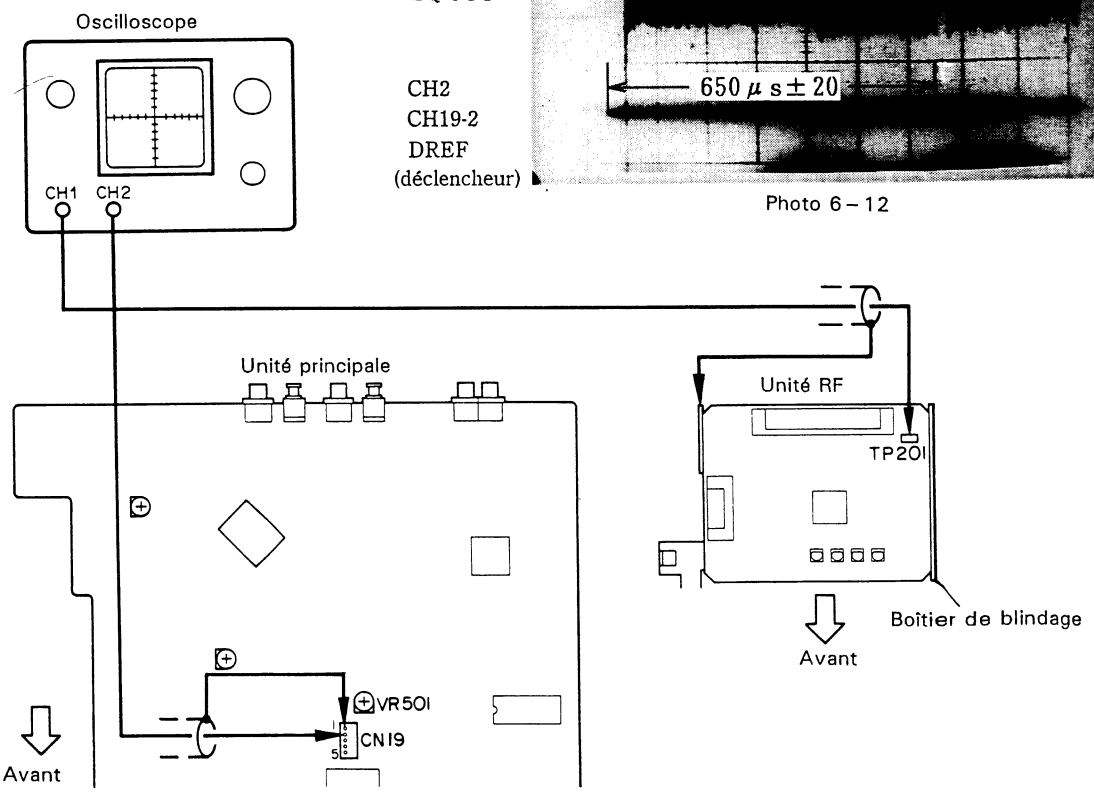


Figure 6-14

3. Réglage du taux d'erreur

But : Reproduire correctement les données.
Symptômes en cas de mauvais ajustement : L'alignement ne correspond pas, une défaillance de défilement se produit, le son est mis en sourdine ou des parasites sont produits.

Gabarit/instrument de mesure	Section de connexion d'instrument de mesure	Etat DAT	Section à ajuster
• Oscilloscope • Bande vierge : SDA-302	• Oscilloscope Dans l'unité principale, CH1 : Entre SYMN (JP (ERR FLG) ou broche IC501-33) et DGND (CN19-1) CH2 : Entre DREF (CN19-2) et DGND (CN19-1)	• Modes de reproduction et d'enregistrement	• Dans Unité principale : VR504

Procédure de réglage

Préparation

- Enregistrer respectivement pendant 15 secondes un signal musical ou un signal d'essai correct sur la bande vierge (SDA-302) dans les modes SP et LP.

1. Reproduire la partie enregistrée et ajuster de manière à ce que le drapeau d'erreur apparaisse le plus (72 crêtes au maximum) sur la forme d'onde de l'oscilloscope de la manière indiquée dans la Photo 6-13.

Forme d'onde

- Gamme de l'oscilloscope :
  CH1 : 5 V/div, 2,5 mS/div
  CH2 :

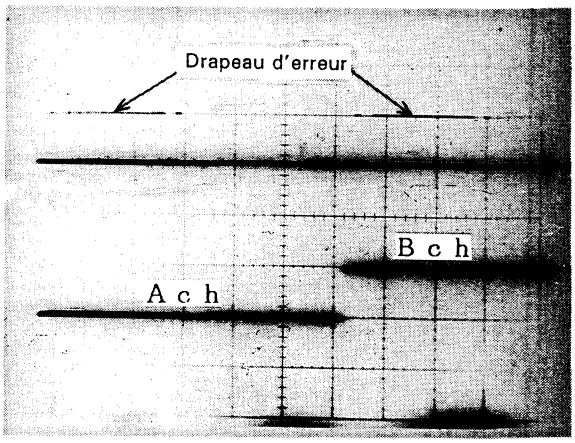


Photo 6-13

Diagramme de réglage

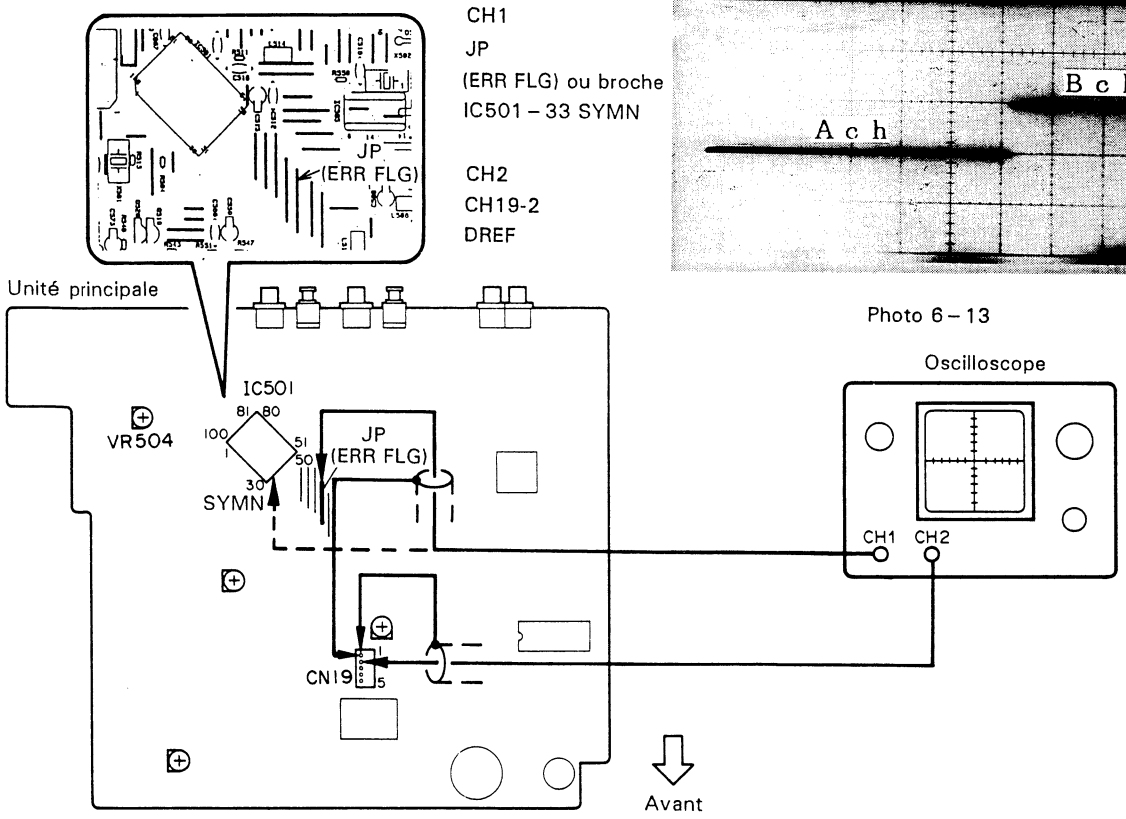


Figure 6-15

Forme d'onde

- Gamme de l'oscilloscope
  CH1 : 5 V/div, 1 mS/div

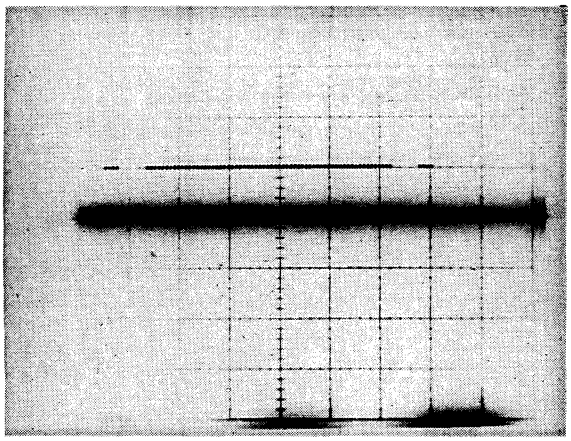


Photo 6 – 14

[Très bon]
- Taux d'erreur 1×10^{-4}
  CH1 : SYMN (JP (ERR FLG) ou broche IC501 – 33)

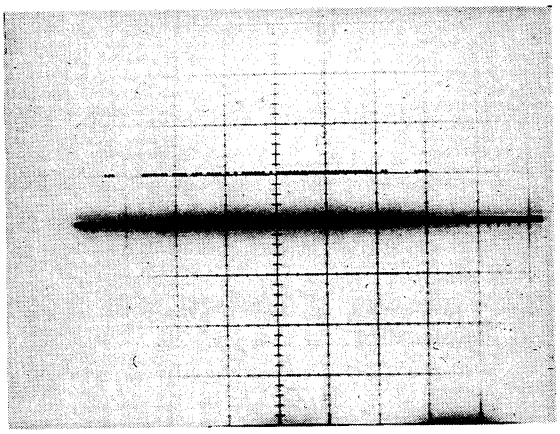


Photo 6 – 15

[L'erreur est corrigée et le son est normal]
- Taux d'erreur 1×10^{-2}
  CH1 : SYMN (JP (ERR FLG) ou broche IC501 – 33)

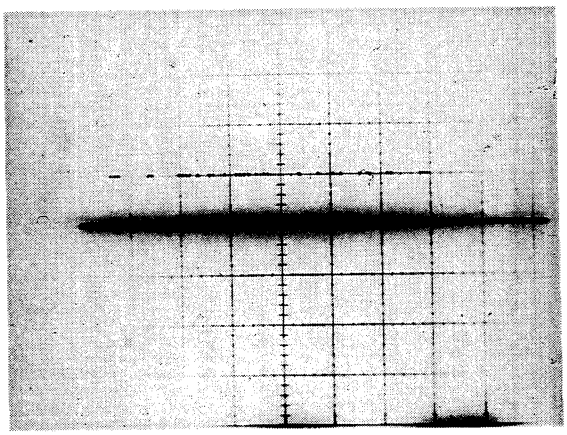


Photo 6 – 16

[Le signal sonore est interpolé et anormal lorsqu'écouté avec soin]
- Taux d'erreur 1×10^{-1}
  CH1 : SYMN (JP (ERR FLG) ou broche IC501 – 33)

6. AJUSTE

Antes de realizar el ajuste, asegúrese de que :

1. Las superficies de funcionamiento de la cabeza y la cinta (guía de la cinta, corona, eje del cabrestante, rodillo de presión) estén limpias.
2. El aparato se haya calentado durante varios minutos.
3. El nivel de señales sea de 0 dBv = 1 Vrms.
4. Se haya conectado una resistencia de carga de 10 kohmios en el terminal de salida de línea del sistema de audio.
5. La sonda del osciloscópio sea 10 :1

Cinta de prueba

Cinta de seguimiento :	SDA-101 (TY-7251)
Cinta de nivel :	SDA-102 (TY-7111)
Medidor de torsión FWD :	SDA-104 (TW-7131)
Cinta en blanco :	SDA-302

Ajustes

● Sección del sistema mecánico

1. Ajuste de torsión de la tensión posterior
2. Confirmación de paso de cinta
3. Ajuste de paso de cinta

● Sección del sistema eléctrico

1. Ajuste de la corriente de grabación ATF
2. Ajuste TACH
3. Ajuste de proporción de errores

Cómo introducir los modos de prueba

(1) Modo de prueba 1.5 TP

1. Ajuste el interruptor TIMER en posición PLAY.
2. Presione la tecla RESET del contador mientras presiona la tecla MUTE.
3. En este momento, confirme que el visualizador del contador muestra "ADJ."
   Para cancelar este modo de prueba, ajuste el interruptor TIMER a la posición OFF o presione la tecla CHECK.

Ajuste de forma de onda de 2/3

1. Active el modo de prueba 1.5 TP.
2. Ajuste el interruptor INPUT SELECTOR en posición ANALOG. (Dirección de avance, forma de onda de 2/3)
3. Compruebe la forma de onda reproducida. Si el seguimiento no se corresponde o no es estable, utilice la tecla MS + (más) y la tecla − (menos) para buscar el punto en que el seguimiento sea estable.
   Si el seguimiento empeora durante la búsqueda (en comparación con la condición inicial), presione la tecla PEAK RESET y vuelva a ajustar el seguimiento usando las teclas MS + y −.

(2) Modo de prueba de ajuste de la corriente de grabación

1. Ajuste el interruptor TIMER a la posición PLAY.
2. Ajuste el INPUT SELECTOR a la posición ANALOG.
3. Presione la tecla MODE mientras mantiene presionada la tecla MUTE.
4. Confirme que la visualización P-NO del tubo FL muestre "db."
   Para cancelar el modo de prueba, presione la tecla CHECK.

Preparaciones para antes del ajuste

1. Extraiga la cubierta.
2. Extraiga la unidad de instalación del casete y la unidad mecánica de DAT. (Vea la sección sobre la extracción de la unidad mecánica de DAT en la página 11.) En este momento, no desconecte el PCB flexible que sale de la unidad mecánica de DAT de su conector y apriete un tornillo de la caja de protección para fijar la unidad mecánica de DAT como se muestra en la figura 6 – 1. Las partes mecánicas podrán ajustarse ahora.

Nota :
Cuando vuelva a instalar la unidad de instalación del casete, después de montar la unidad mientras la puerta de entrada del casete del panel frontal está abierta, apriete los cinco tornillos. Confirme que la puerta se abre y cierra con suavidad moviendo el brazo acoplado en la unidad hacia arriba y hacia abajo. (Vea la figura 6 – 2.)

● Preparación para la inspección de la unidad principal

1. Afloje y extraiga el anillo de resorte del eje del control, y tire hacia afuera del eje.
2. Extraiga el cable plano de los tres conectores, afloje y extraiga los nueve tornillos del panel posterior y un tornillo del soporte del control y extraiga el panel posterior.
3. Afloje y extraiga los nueve tornillos que fijan la unidad principal y sujete el tablero de la unidad principal como se muestra en la figura 6 – 3.

Nota :
- *Para la grabación analógica, extraiga la unidad VR principal del panel posterior y conecte el cable plano desde la unidad VR principal a CN15. Para utilizar el VR de balance o auriculares, conecte el cable a CN16 ó CN14, respectivamente.*
- *Para operar esta unidad con la unidad MAIN en posición recta, conecte los puntos de tierra ①, ② y ③, mostrados en la figura de abajo, al chasis. Para emplear la unidad VR principal, conecte también el punto de tierra ④ al chasis.*

Nota para el montaje :
Instale primero la unidad VR principal en el panel posterior, después instale el panel posterior en el chasis.

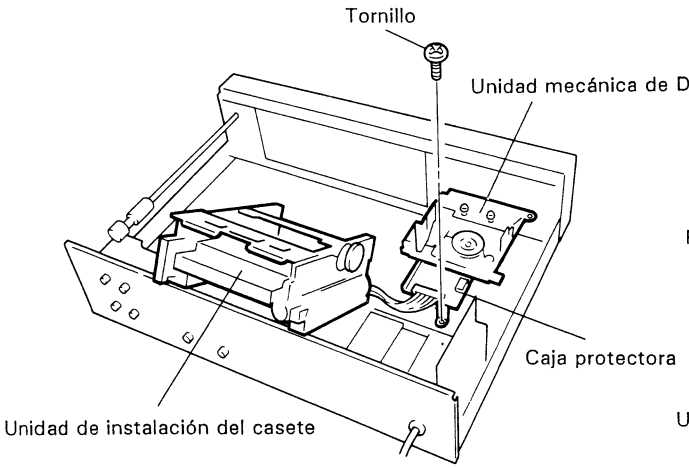


Figura 6 – 1

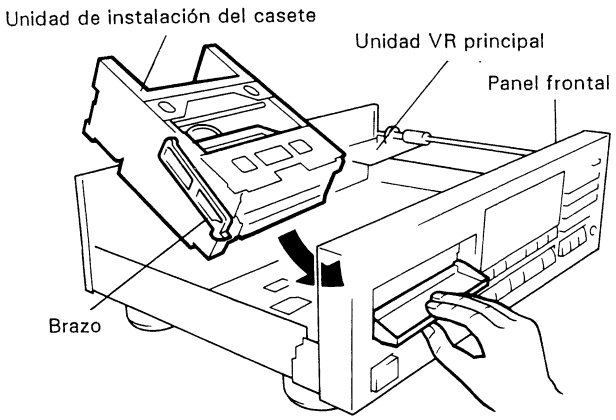


Figura 6 – 2

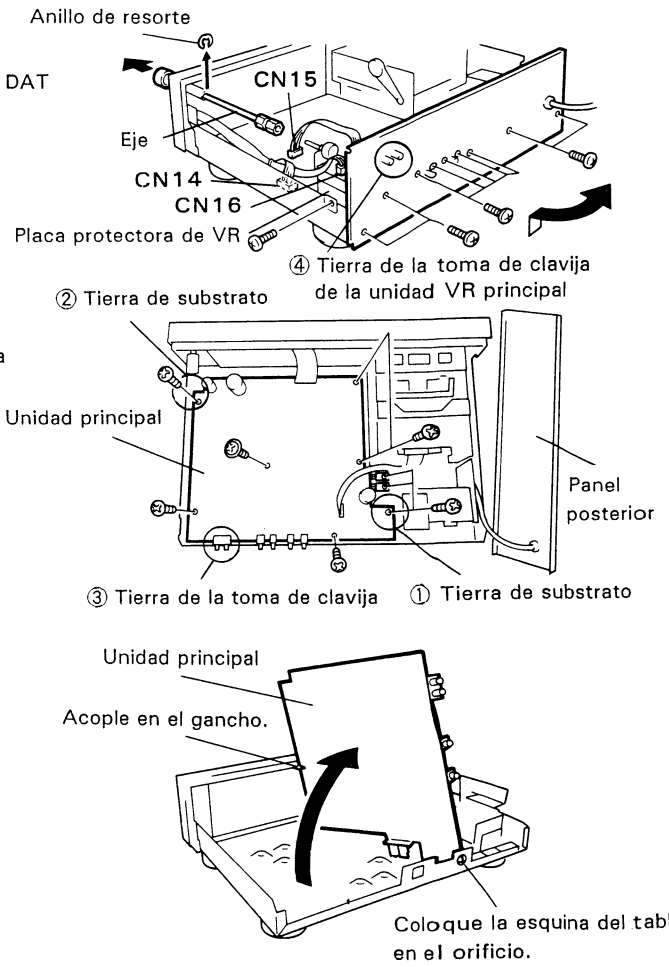


Figura 6 – 3

6.1 Ajuste de la sección del sistema mecánico

1. Ajuste de la torsión de la tensión posterior

Propuesta : Estabilizar el contacto de la cinta con la corona giratoria.
Síntomas en casos de ajuste incorrecto : Torsión pequeña → El funcionamiento de la cinta es inestable.
Torsión grande → La cinta o la cabeza está dañadas.

Instrumento/plantill de medición	Sección de conexión del instrumento de medición	Estado de DAT	Sección a ser ajustada
• Medidor de torsión FWD : SDA-104 (TW-7131) • Contrapeso del casete DAT : R-2606		• Modo PLAY	• Parte de enganche del resorte de la base del carrete

Procedimiento de ajuste

Preparación

- Monte el medidor de torsión FWD (SDA-104). (En este momento, acople el contrapeso de casete para evitar que la cinta se mueva hacia arriba.)

1. Presione la tecla PLAY y confirme que el valor central de la torsión de tensión posterior es de 6,5 a 9,5 g•cm. Si el valor está fuera del especificado, ajuste las posiciones A a C de la parte de enganche del resorte de la base del carrete.

Diagrama de ajuste

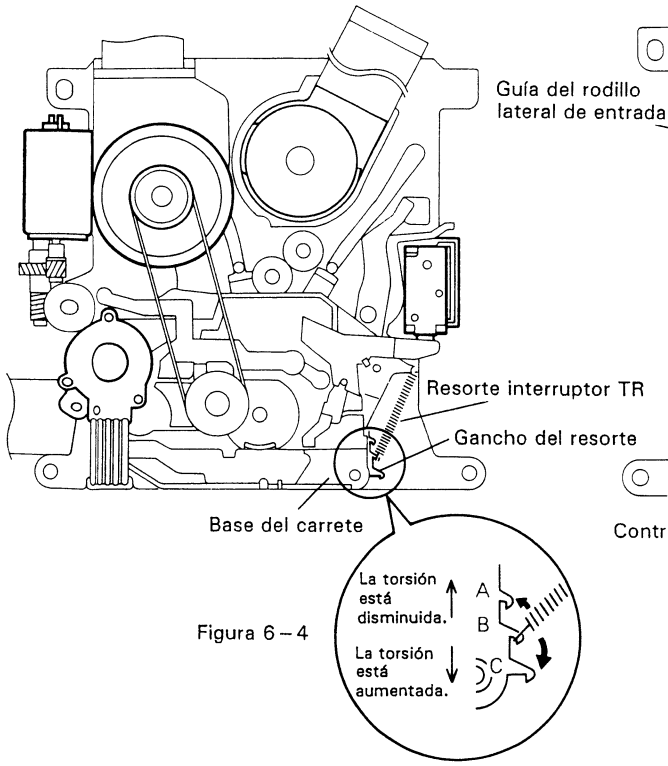


Figura 6-4

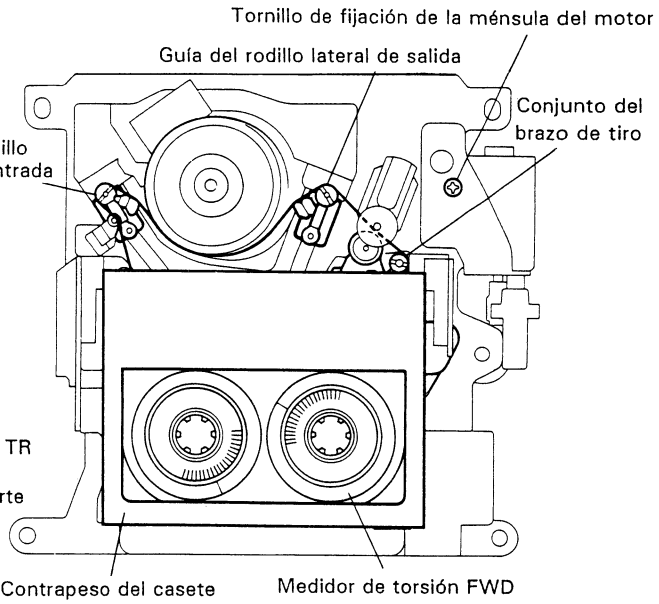


Figura 6-5

2. Confirmación de paso de la cinta

Propuesta : Para confirmar que la cinta funciona correctamente a lo largo del borde delantero del conjunto de la corona.
(ajuste del funcionamiento de la cinta)
Síntomas en casos de ajuste incorrecto : El sonido se interrumpe, se genera ruido o la calidad del sonido disminuye.

Instrumento/plantilla de medición	Sección de conexión del instrumento de medición	Estado de DAT	Sección a ser ajustada
• Osciloscópio • Cinta de prueba Cinta de seguimiento : SDA-101 (TY-7251) • Contrapeso del casete DAT : R-2606	• Osciloscópio En la unidad RF, CH1 : Entre EQOUT (TP201) y la caja protectora de RF En la unidad principal, CH2 : Entre DREF (CN19-2) y DGND (CN19-1)	• Modo PLAY (modo de prueba)	• Comprobación de forma de onda

Procedimiento de ajuste

Preparación

- Monte la cinta de seguimiento (SDA-101). (En este momento, acople el contrapeso del casete en la cinta.)
- Después de ajustar el modo de prueba 1.5 TP, ajuste la forma de onda de 2/3 y reproduzca la cinta. (Vea la página 62.)

1. Compruebe la forma de onda usando el osciloscópio y confirme que la planeidad es de 75% o más. (En este momento, reproduzca la cinta después de confirmar que el orificio RECG3 de la cinta de prueba está abierto.)
2. Si la planeidad es menor del 75% en este momento, ejecute el ajuste de paso de la cinta (página 67).

- Planeidad = B/A × 100 (%)

Diagrama de ajuste

Nota :
Confirme que el orificio está abierto.
(RECG3 : Cinta 1.5 TP)

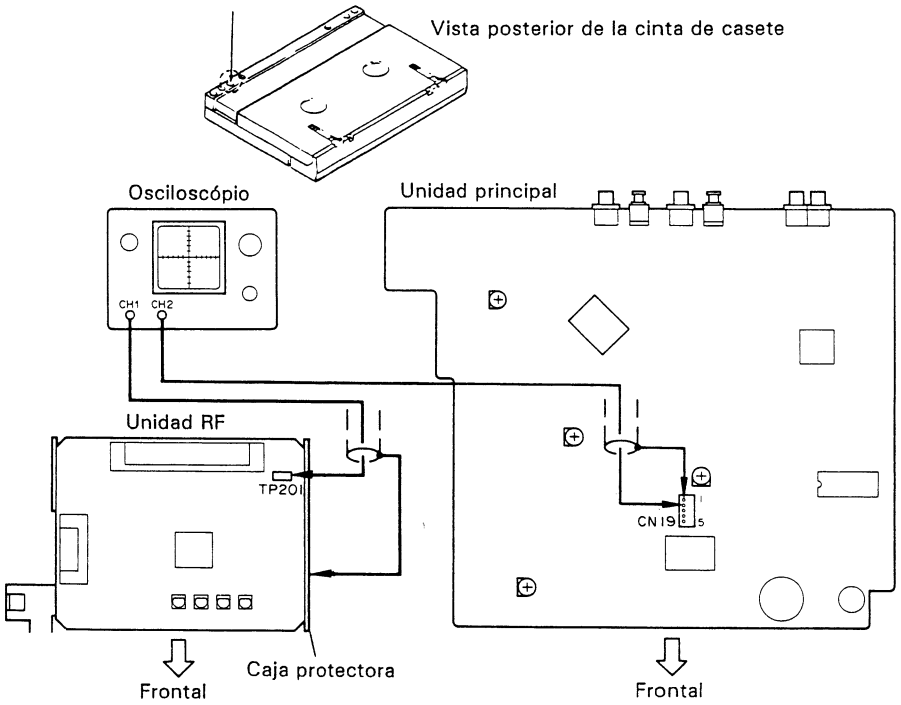


Figura 6-6

Forma de onda

- Margen del osciloscópio :
  50 mV/div. 1 mS/div

Normal

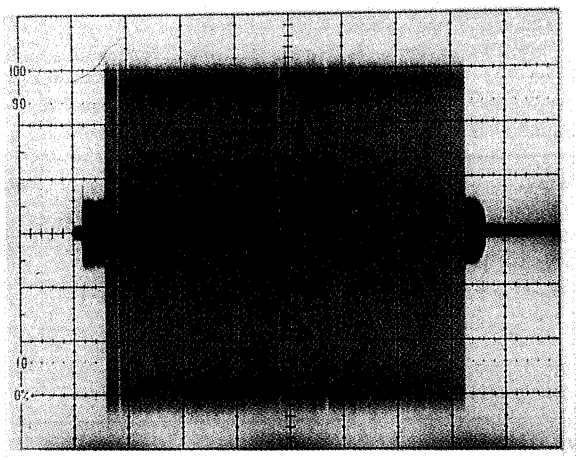


Foto 6 – 1

Fallo en el lado de entrada

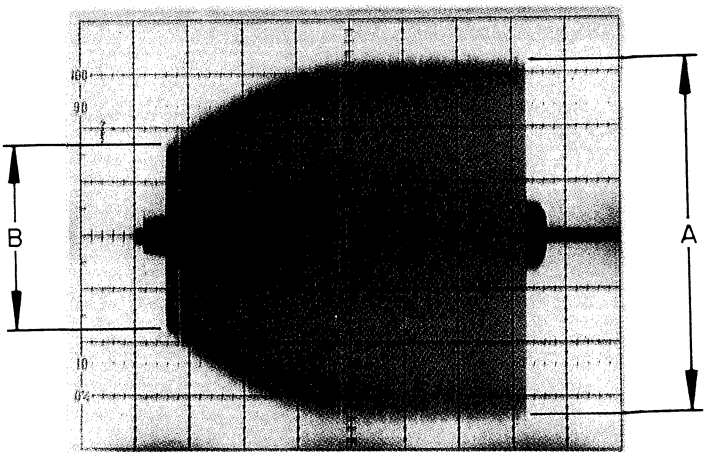


Foto 6 – 2

Fallo en el lado de salida

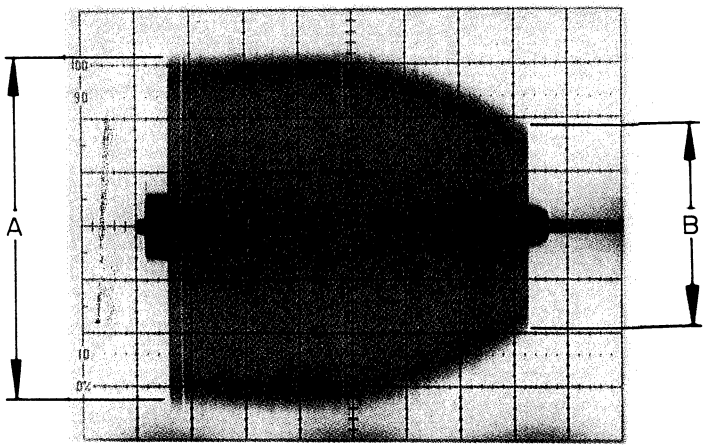


Foto 6 – 3

3. Ajuste de paso de la cinta

Propuesta : Hacer que la cinta funcione correctamente a lo largo del borde delantero del conjunto de la corona.
(ajuste del funcionamiento de la cinta)
Síntomas en caso de ajuste incorrecto : El sonido se interrumpe, se genera ruido o la calidad de sonido disminuye.

Instrumento/plantilla de medición	Sección de conexión del instrumento de medición	Estado de DAT	Sección a ser ajustada
• Osciloscópio • Cinta de prueba Cinta de seguimiento : SDA-101 (TY-7251) • Destornillador de pasadores : R-1784 • Destornillador Phillips de broca 0 • Contrapeso del casete DAT: R-2606	• Osciloscópio En la unidad RF, CH1 : Entre EQOUT (TP201) y la caja protectora de RF En la unidad principal, CH2 : Entre DREF (CN19-2) y DGND (CN19-1)	• Modo PLAY	• Guía del rodillo (lado de entrada, lado de salida) • Guía de tiro

Procedimiento de ajuste

3.1 Ajuste aproximado de cada guía

1. Después de girar las guías del rodillo en los lados de entrada y salida hacia la derecha (usando el destornillador de pasadores (R-1784) hasta que las guías toquen ligeramente el extremo, gire las guías en dirección invertida una vuelta.
2. Gire la brida de guía hacia el punto donde la superficie superior de la brida de guía del conjunto del brazo de tiro se corresponda con el extremo superior del eje del brazo de tiro.
(Vea la figura 6-7.)

3.2 Ajuste preciso de la altura de la guía de rodillo

Preparación

- Monte la cinta de seguimiento (SDA-101). (Acople el contrapeso del casete en la cinta.)
- Después de ajustar el modo de prueba 1.5 TP, ajuste la forma de onda de 2/3 y reproduzca la cinta. (Vea la página 62.)
- Confirme que el orificio de RECG3 de la cinta de prueba está abierto. (Vea la figura 6-8.)

[Ajuste del lado de salida]

1. Compruebe la forma de onda RF. Foto 6-7, apriete la guía del rodillo del lado de salida (1/8 de vuelta). Foto 6-9, afloje la guía de rodillo del lado de salida (1/8 de vuelta).

[Ajuste del lado de entrada]

2. Compruebe la forma de onda RF. Foto 6-6, apriete la guía de rodillo del lado de entrada (1/4 de vuelta). Foto 6-8, afloje la guía de rodillo del lado de entrada (1/4 de vuelta).
3. Observe la forma de onda RF y repita los pasos 1 y 2 hasta que la forma de onda RF se corresponda con la foto 6-5.
4. Presione la tecla OPEN/CLOSE para expulsar la cinta, y ejecute el procedimiento de confirmación de paso de la cinta otra vez (página 65).

Diagrama de ajuste

- Las conexiones del osciloscópio, etc. son igual que en la sección 2 de confirmación de paso de la cinta (página 65).

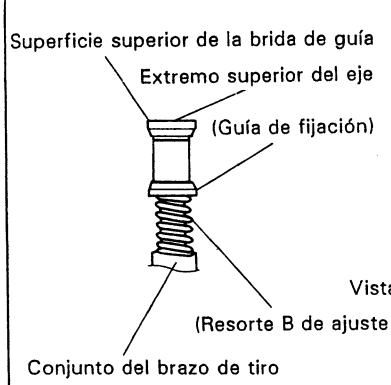


Figura 6-7

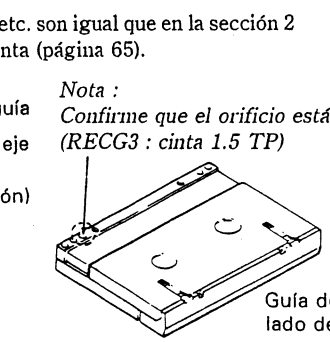


Figura 6-8

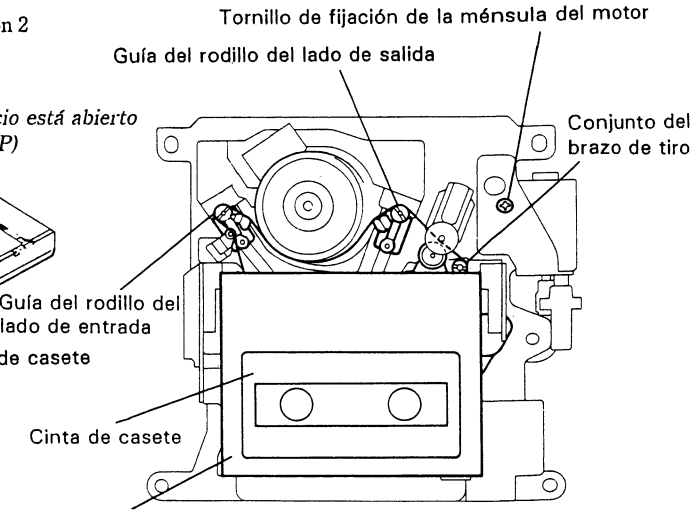


Figura 6-9

Forma de onda

- Margen del osciloscópio :
  50 mV/div, 1 mS/div

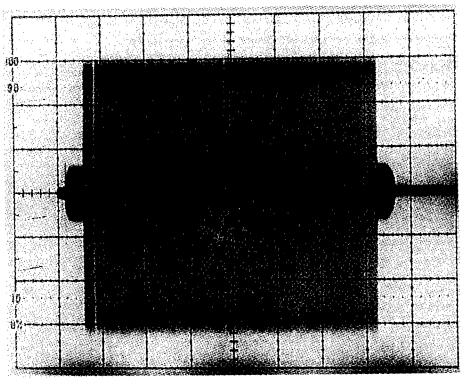


Foto 6 – 4 Nivel de salida máximo de RF

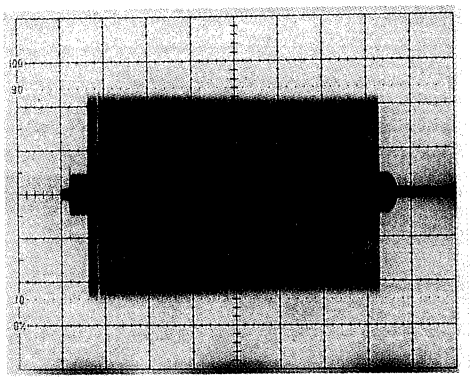


Foto 6 – 5 Nivel de salida de RF de 2/3 (ajuste completo)

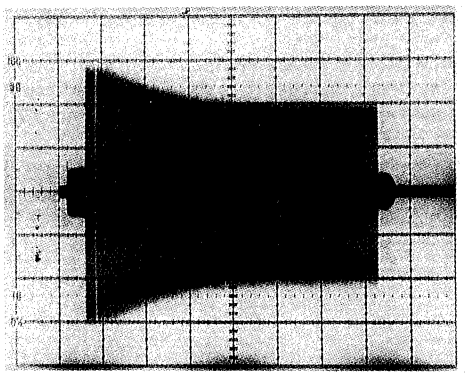


Foto 6 – 6 Rodillo de la guía del lado de entrada demasiado elevado

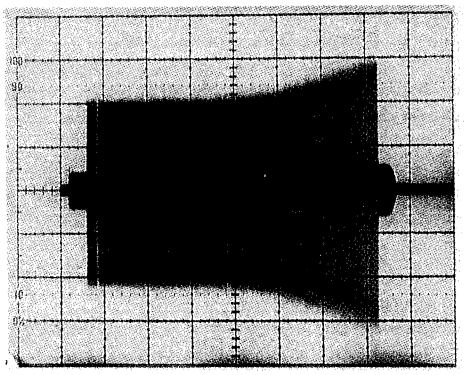


Foto 6 – 7 Rodillo de la guía del lado de salida demasiado elevado

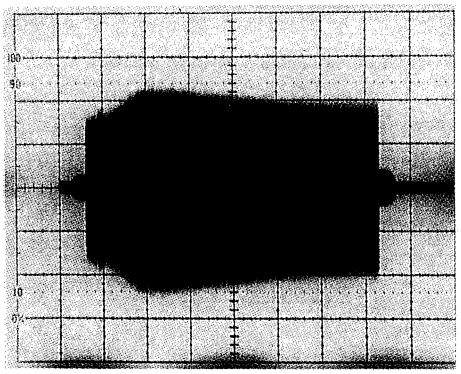


Foto 6 – 8 Rodillo de la guía del lado de entrada demasiado bajado

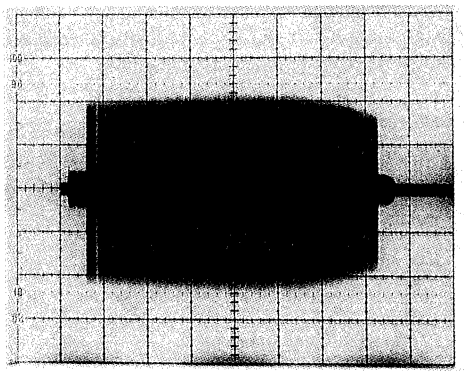


Foto 6 – 9 Rodillo de la guía del lado de salida demasiado bajado

3.3 Ajuste preciso de la guía de tiro

1. Reproduzca la cinta y ajuste el modo CUE presionando continuamente la tecla FF/CUE cuando la cinta empiece a bobinarse. Observe la torsión de la cinta entre el rodillo de presión y la guía de tiro viendo la imagen de la cabeza del tornillo de fijación de la ménsula del motor reflejada en la superficie magnética de la cinta. La relación entre la imagen reflejada de la cabeza del tornillo y altura de la brida de guía de tiro se muestra en la figura 6 – 10.
2. Apriete ligeramente la brida de la guía de tiro 180 grados desde la posición donde se realizó el procedimiento de ajuste. Confirme que la imagen reflejada cambia de "c" a "a" del proceso de apriete.
3. Por el contrario, afloje labrida de guía de tiro 180 grados y confirme que la imagen reflejada cambia de "a" a "c" del proceso de aflojamiento.
4. Afloje la brida de guía de tiro en la condición "b" en que el borde superior de la cinta se curva ligeramente, y después afloje 90 grados.
5. Mantenga presionada la tecla REW/REV para ajustar el modo REW y confirme que la cinta no se curva en las secciones A y B de la figura 6 – 11.
6. Después de confirmar que no aparece torsión en la cinta en la sección C de la figura 6 – 12, compruebe la torsión y combadura (forma convexa) en la sección D. (Normalmente, la combadura es de 0,5 mm o menos.)
7. Después de presionar la tecla OPEN/CLOSE para expulsar la cinta, reproduzca la cinta otra vez, mantenga presionada la tecla FF-/CUE y observe de nuevo la imagen reflejada de la cabeza del tornillo para confirmar que está en condición "c".
8. Mantenga presionada la tecla REW/REV y confirme que la curvatura y torsión en las secciones A a D son iguales.
9. Aplique pegamento de bloqueo en el tornillo de la superficie superior de la brida de guía de tiro y bloquee el tornillo.

Diagrama de ajuste

La imagen del tornillo aparece en la cinta cuando el tornillo refleja luz.

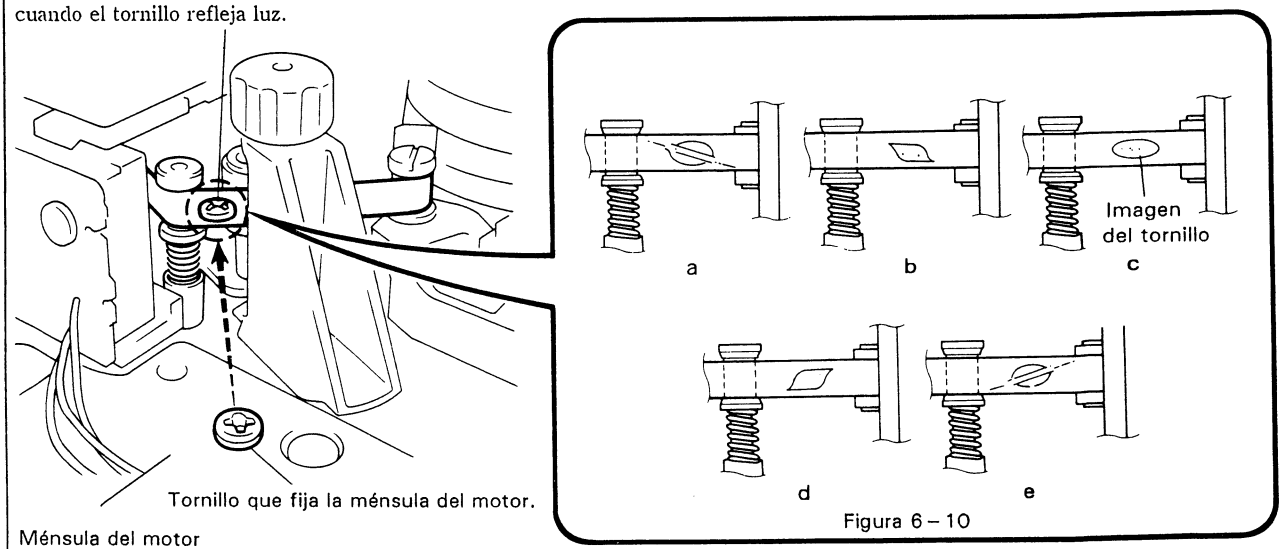


Figura 6 – 10

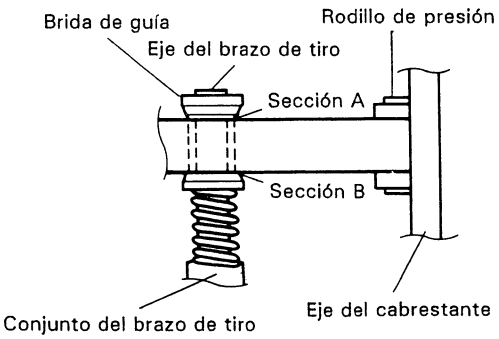


Figura 6 – 11

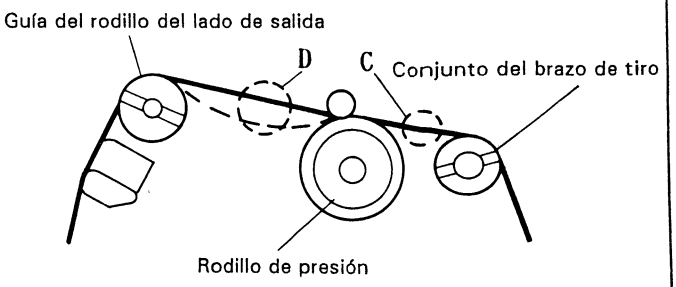


Figura 6 – 12

6.2 Ajuste de la sección del sistema eléctrico

1. Ajuste de la corriente de grabación ATF

Propuesta : Ajustar la corriente de grabación óptima.
Síntomas en casos de ajuste incorrecto : Sonido interrumpido (el seguimiento no puede corresponderse), ruido.

Instrumento/plantilla de medición	Sección de conexión del instrumento de medición	Estado de DAT	Sección a ajustar
● Osciloscópio ● Cinta de prueba Cinta de prueba de nivel : SDA-102 (TY-7111) Cinta en blanco : SDA-302 *Nota :* *Utilice una parte sin utilizar donde la señal RF no esté grabada.*	● Osciloscópio En la unidad principal, CH1 : Entre PLENV (CN19-3) y DGND (CN19-1) CH2 : Entre DREF (CN19-2) y DGND (CN19-1)	● Modos PLAY y REC	● En la unidad RF VR203 (cabeza A) VR204 (cabeza B)

Procedimiento de ajuste

Preparación

- Ajuste el modo de prueba para el ajuste de la corriente de grabación. (Vea la página 62.)

1. Reproduzca la cinta de prueba de nivel (SDA-102), mida y grabe la tensión en las secciones "a" y "b" de la forma de onda de la foto 6-10.
2. Confirme que la cinta en blanco (SDA-302) no se ha usado o tiene una parte sin usar. Presione la tecla REC y después la tecla PAUSE de forma que la señal del transmisor integral de la máquina se grabe durante 30 a 60 segundos.
3. Después de detener la grabación, rebobine la parte grabada en el paso 2 y confirme que los niveles de las formas de onda reproducidas están dentro del margen de + 25% y − 20% de los niveles "a" y "b" grabados en el paso 1. (Vea la foto 6-11.)
4. Si los niveles están fuera del margen del paso 3, gire ligeramente VR203 para la cabeza A y VR204 para la cabeza B y grabe la señal de nuevo en la parte sin usar de la cinta en blanco. Después, ejecute el paso 3.
5. Repita los pasos 3 y 4 hasta que los niveles estén dentro del margen especificado en el paso 3.

Diagrama de ajuste

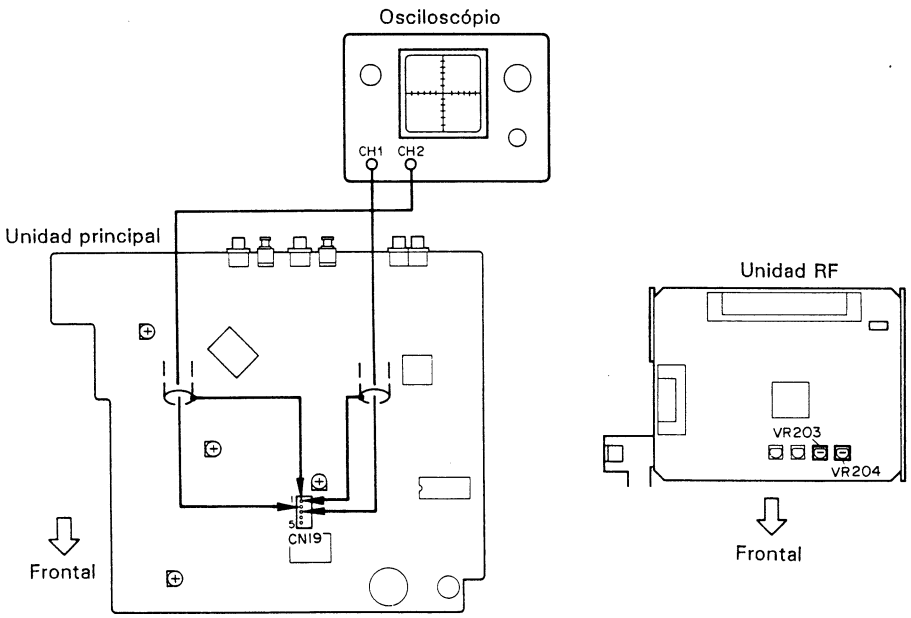


Figura 6-13

Forma de onda

Margen del osciloscópio
CH1 : 0,5 V/div, 2,5 mS/div
CH2 : 5 V/div

Durante la reproducción de la cinta de nivel (SDA-102)

CH1
CN19-3 ①
PLENV

CH2
CN19-2 ②
DREF

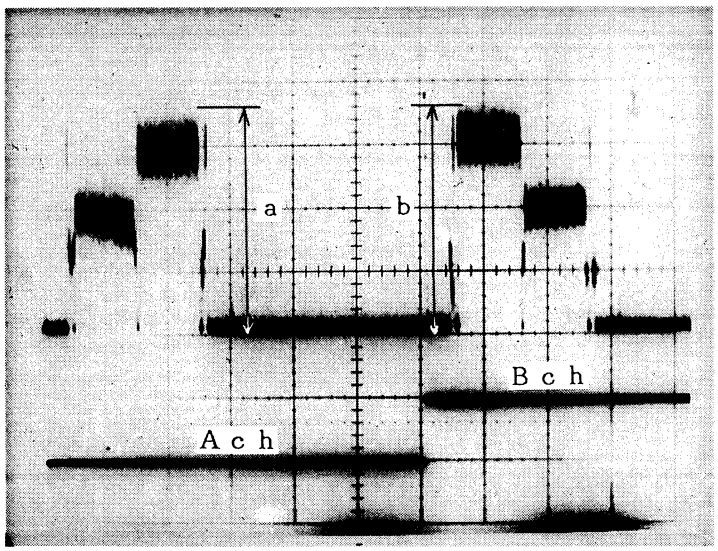


Foto 6 – 10

Durante la reproducción de la cinta en blanco autograbada

CH1
CN19-3 ①
PLENV

CH2
CN19-2 ②
DREF

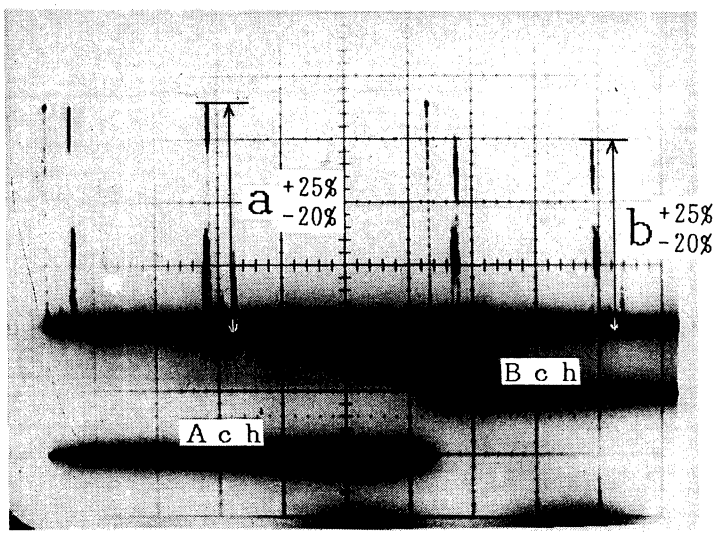


Foto 6 – 11

2. Ajuste de TACH

Propuesta : Corresponder la posición de grabación en el formato de la cinta.
Síntomas en casos de ajuste incorrecto : El sonido de la cinta grabada con otra máquina se interrumpe (no hay problemas con la autograbación) o el ruido aumenta al silenciar el sonido grabado.

Instrumento/plantilla de medición	Sección de conexión del instrumento de medición	Estado de DAT	Sección a ser ajustada
● Osciloscópio ● Cinta de prueba Cinta de seguimiento : SDA-101 (TY-7251)	● Osciloscópio En la unidad RF, CH1 : Entre EQOUT (TP201) y la caja protectora de RF En la unidad principal, CH2 : Entre DREF (CN19-2) y DGND (CN19-1)	● Modo PLAY (modo de prueba)	● En la unidad principal : VR501

Procedimiento de ajuste

Preparación

- Ajuste el modo de prueba 1.5 TP. (Vea la página 62.)

1. Ajuste de forma que la parte del marcador de la forma de onda RF sea de 650 μs ±20 empezando con el borde delantero de la forma de onda DREF.

Forma de onda

- Margen del osciloscópio
  CH1 : 100 mV/div, 0,1 mS/div
  CH2 : 5 V/div (accionador)

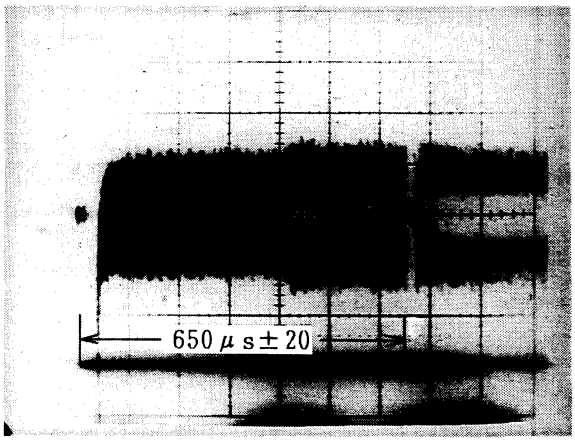


Foto 6-12

Diagrama de ajuste

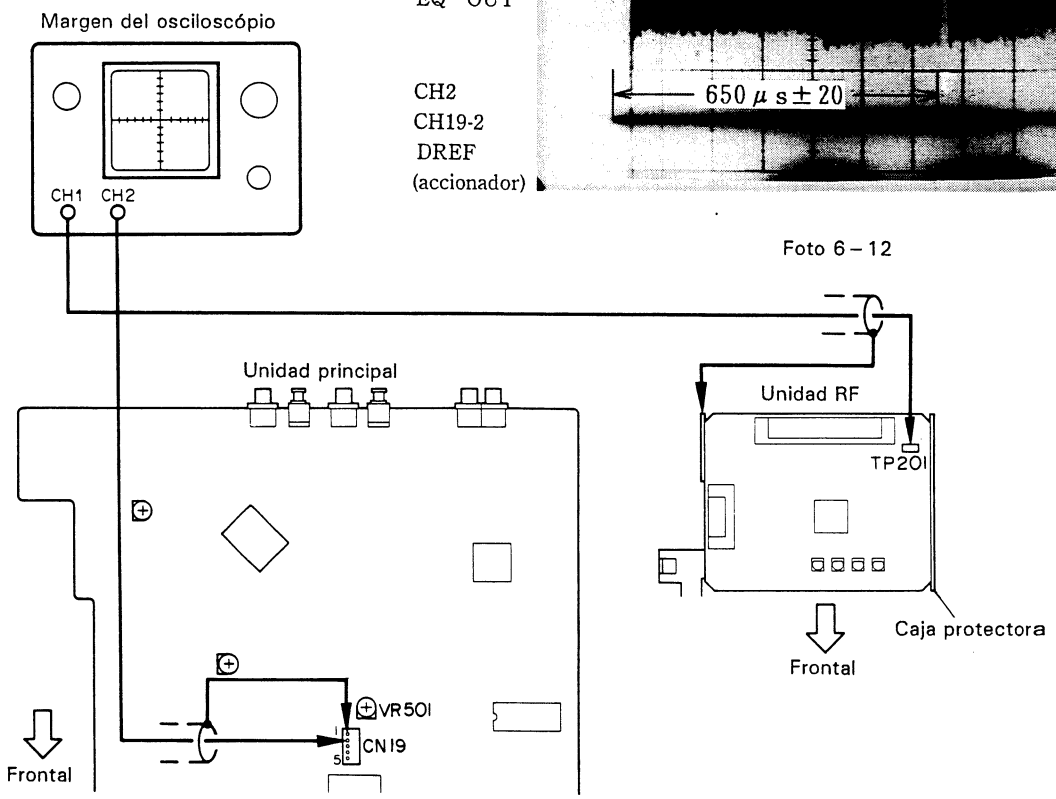


Figura 6-14

3. Ajuste de proporción de errores

Propuesta : Corregir los datos reproducidos.
Síntomas en casos de ajuste incorrecto : El seguimiento no se corresponde, fallos en el funcionamiento, silenciamiento del sonido, generación de ruidos.

Instrumento/plantilla de medición	Sección de conexión del instrumento de medición	Estado de DAT	Sección a ser ajustada
● Osciloscópio ● Cinta en blanco : SDA-302	● Osciloscópio En la unidad principal, CH1 : Entre SYMN (JP (ERR FLG) o patilla IC501-33) y DGND (CN19-1) CH2 : Entre DREF (CN19-2) y DGND (CN19-1)	● Modos REC y PLAY	● En la unidad principal : VR504

Procedimiento de ajuste

Preparación

- Grabe una señal musical o una señal de prueba adecuada en la cinta en blanco (SDA-302) en los modos SP y LP durante 15 segundos respectivamente.

1. Reproduzca la parte grabada y ajuste de forma que la bandera de error aparezca al máximo (72 picos máximos) en la forma de onda del osciloscópio como se muestra en la foto 6-13.

Forma de onda

- Margen del osciloscópio
  CH1 : 5 V/div, 2,5 mS/div
  CH2 :

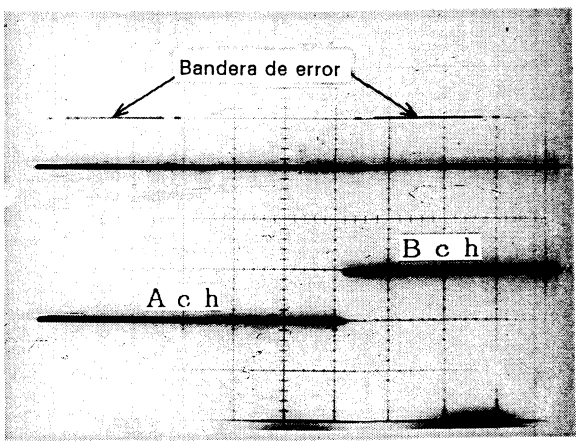


Foto 6-13

Diagrama de ajuste

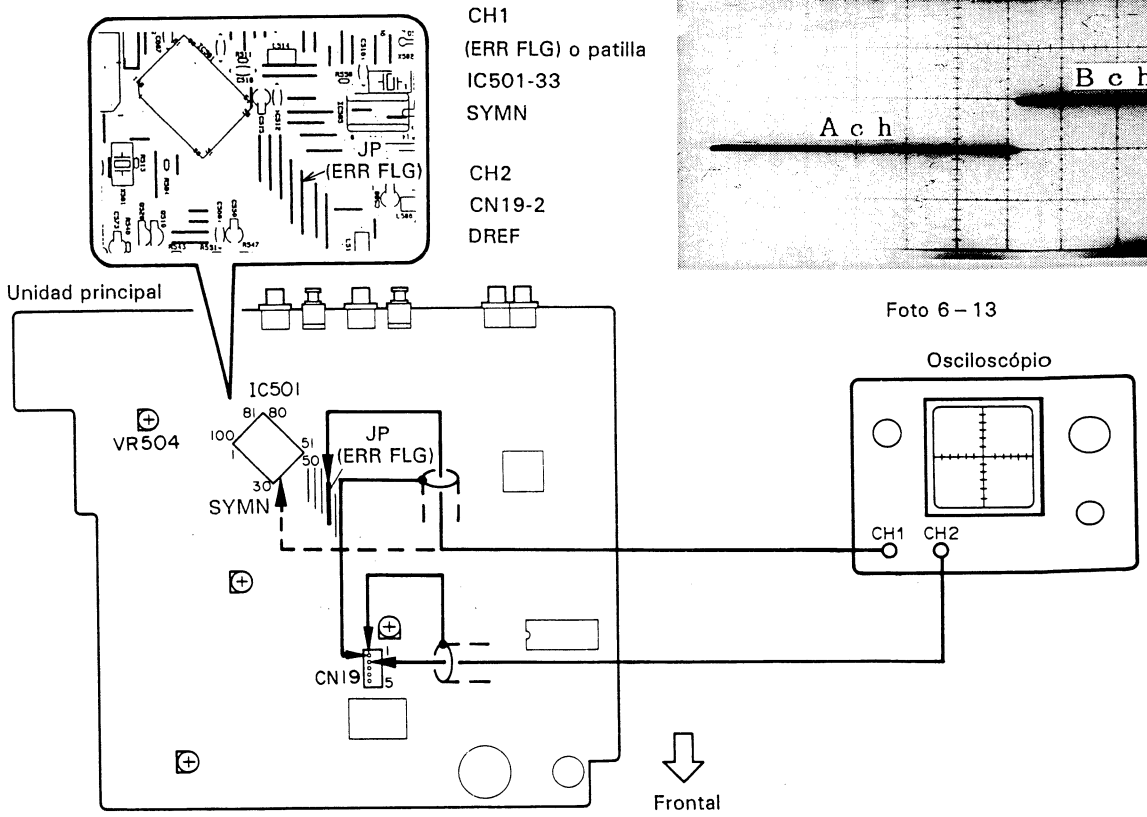


Figura 6-15

Forma de onda

- Margen del osciloscópio
  CH1 : 5 V/div, 1 mS/div

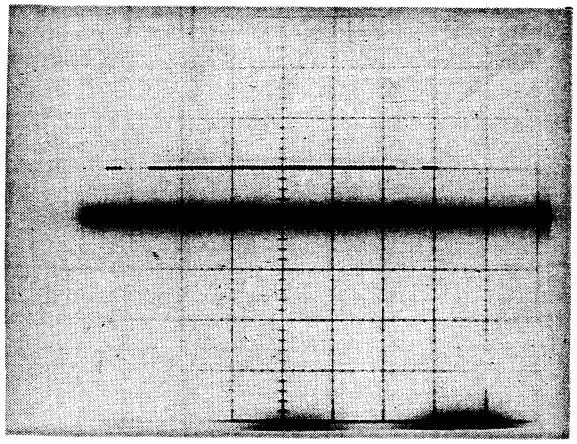


Foto 6 – 14

[Muy bien]
- Proporción de errores : $1 \times 10;^{-4}$
  CH1 : SYMN (JP (ERR FLG) o patilla IC501033)

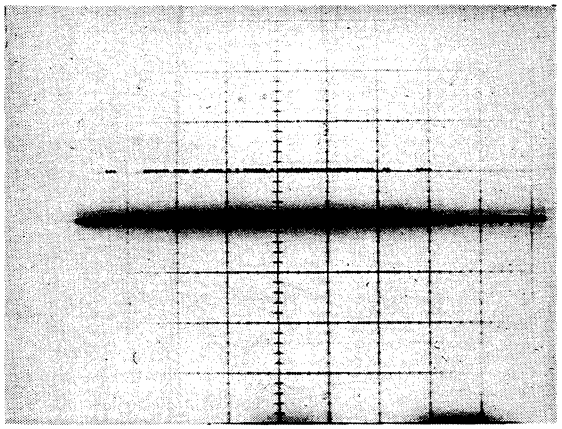


Foto 6 – 15

[El error se corrige y el sonido es normal]
- Proporción de errores : 1×10^{-2}
  CH1 : SYMN (JP (ERR FLG) o patilla IC – 501 – 33)

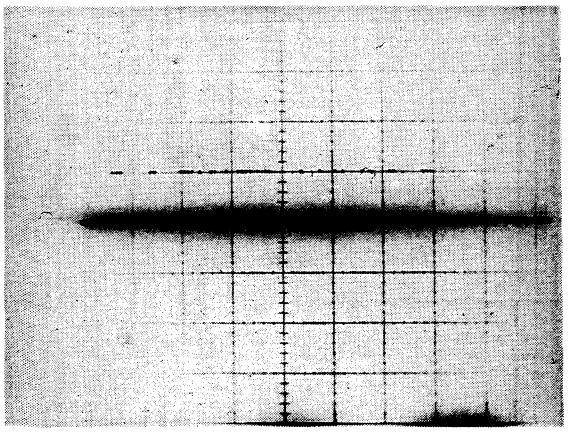
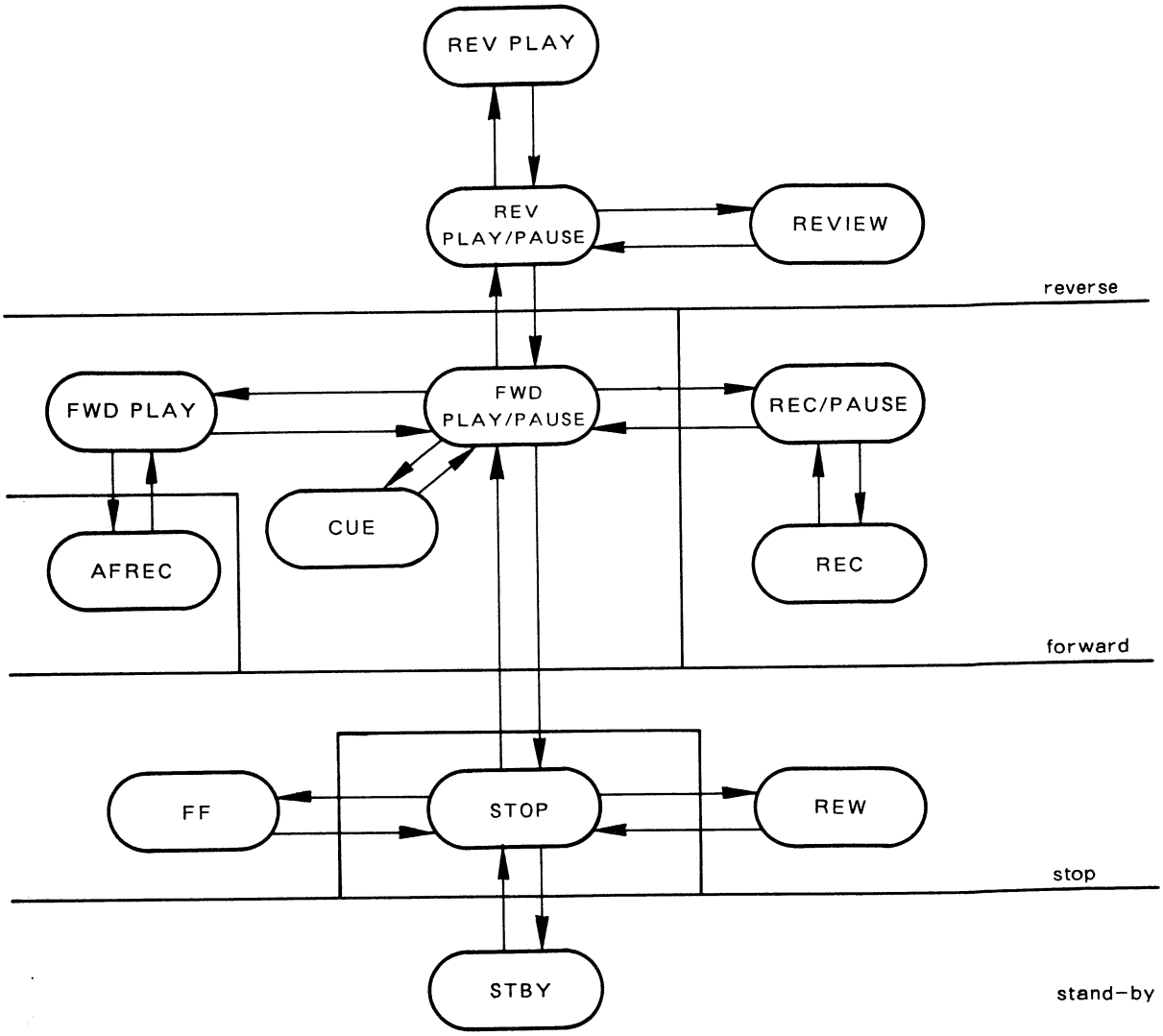


Foto 6 – 16

[La señal de sonido se intercala y es anormal cuando se escucha cuidadosamente]
- Proporción de errores : 1×10^{-1}
  CH1 : SYMN (JP (ERR FLG) o patilla IC501 – 33)

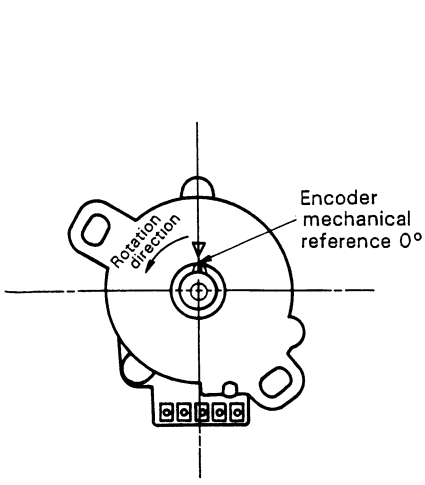
7. FLOW CHART

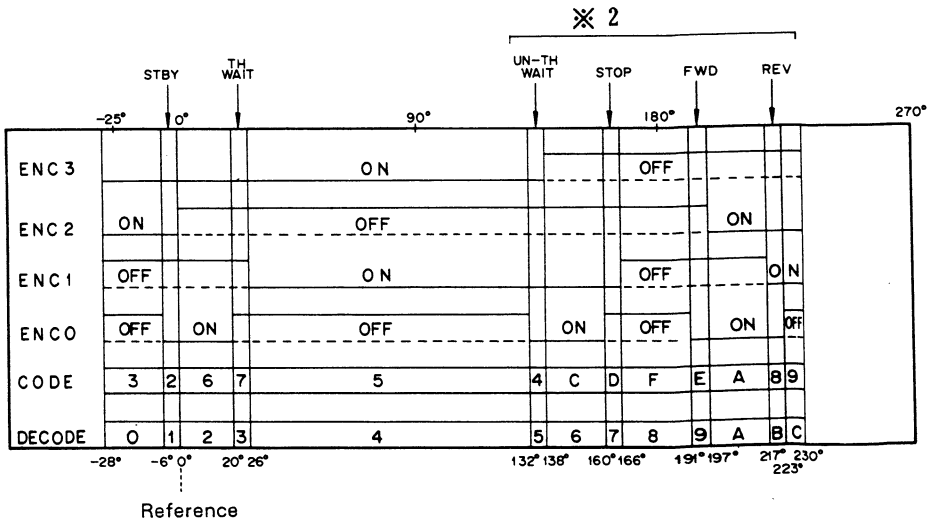
7.1 MECHANICAL MODE TRANSITION DIAGRAM



7.2 ENCODER PATTERN

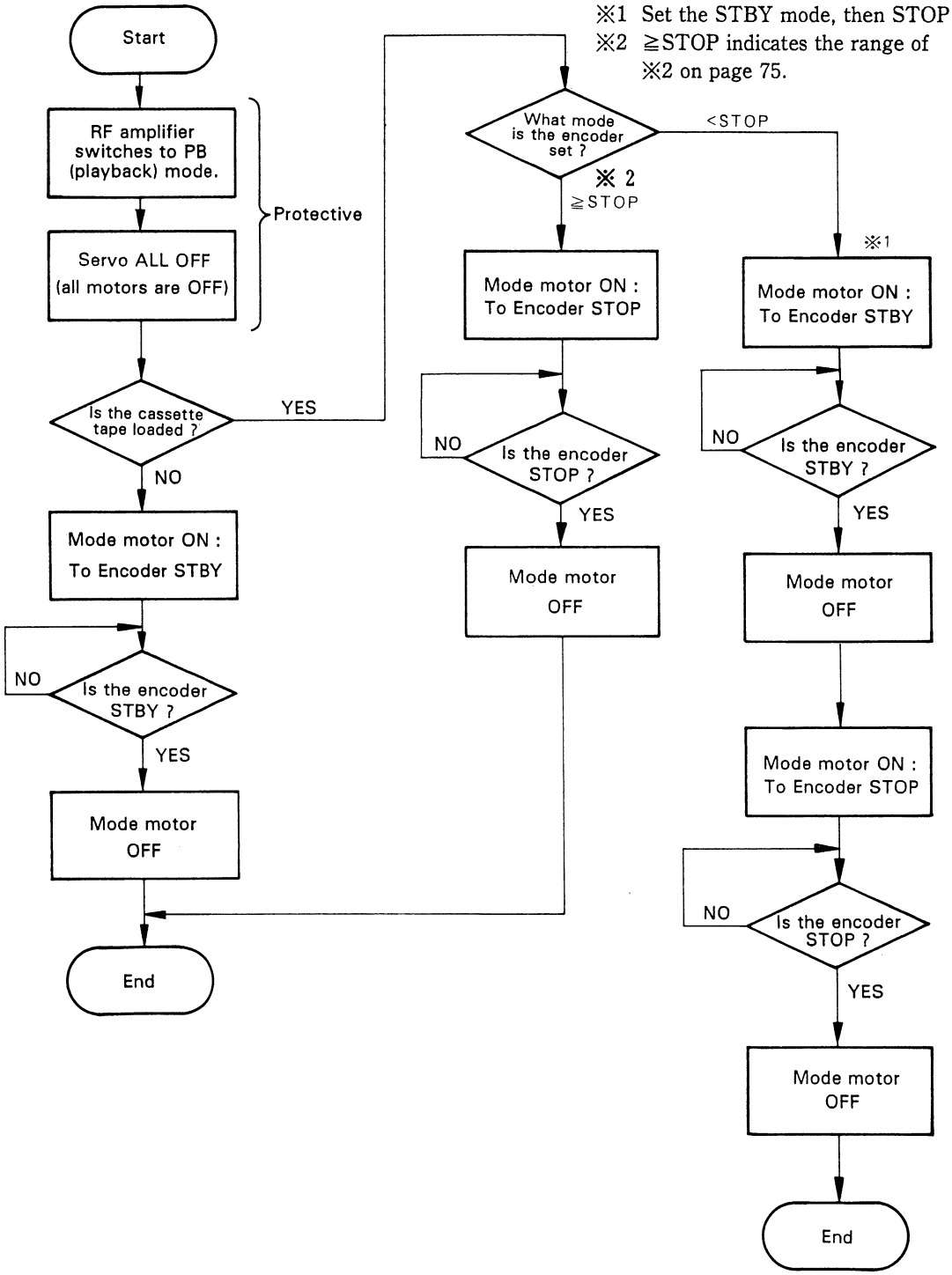
● STBY → TH WAIT (Threading Wait) → UN TH WAIT (Unthreading Wait) → STOP → FWD → RE





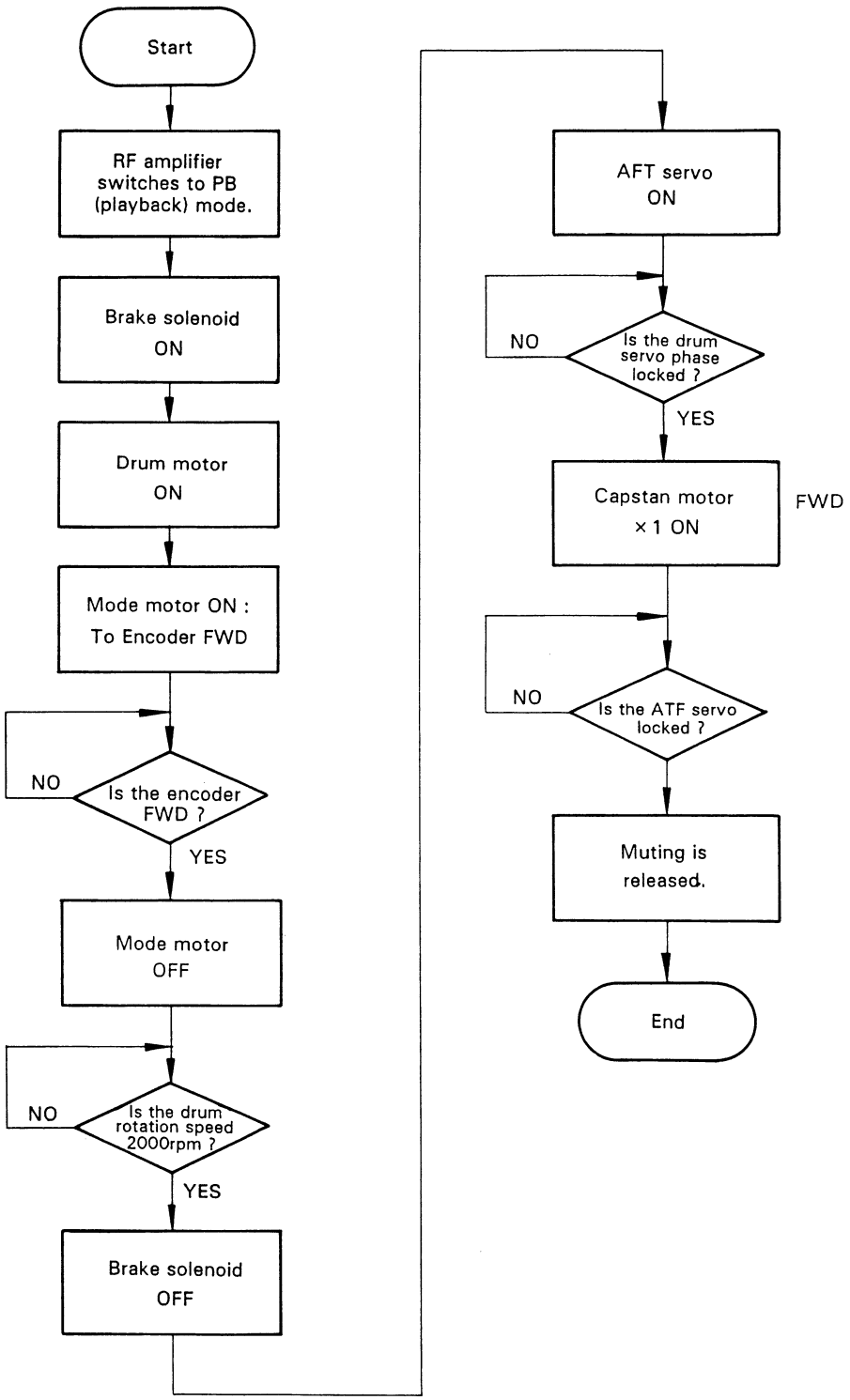
7.3 POWER ON

Cassette Tape Loaded → STOP
Cassette Tape Unloaded → STBY (standby, unthreading)

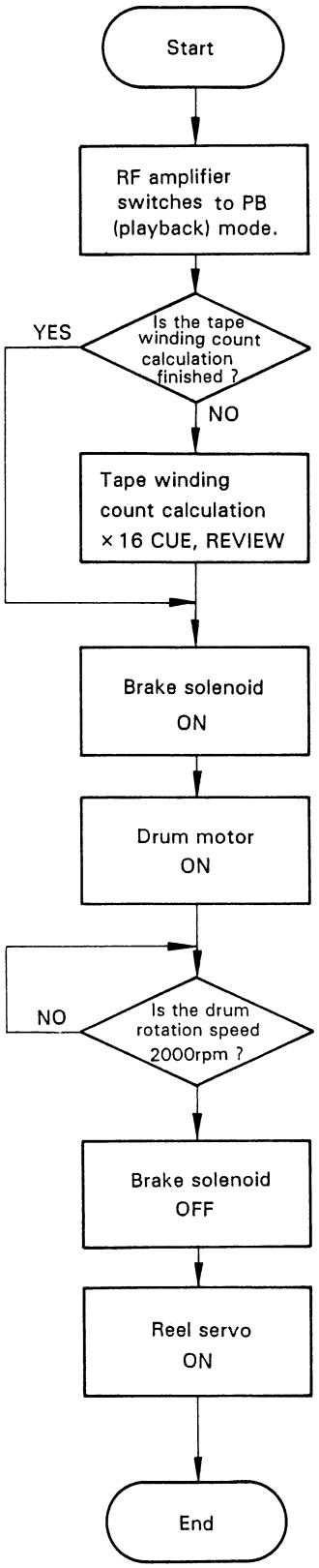


※1 Set the STBY mode, then STOP mode.
※2 ≧STOP indicates the range of ※2 on page 75.

7.4 STOP → PLAY


Start
RF amplifier switches to PB (playback) mode.
Brake solenoid ON
Drum motor ON
Mode motor ON : To Encoder FWD
NO
Is the encoder FWD ?
YES
Mode motor OFF
NO
Is the drum rotation speed 2000rpm ?
YES
Brake solenoid OFF
AFT servo ON
NO
Is the drum servo phase locked ?
YES
Capstan motor ×1 ON
FWD
NO
Is the ATF servo locked ?
Muting is released.
End

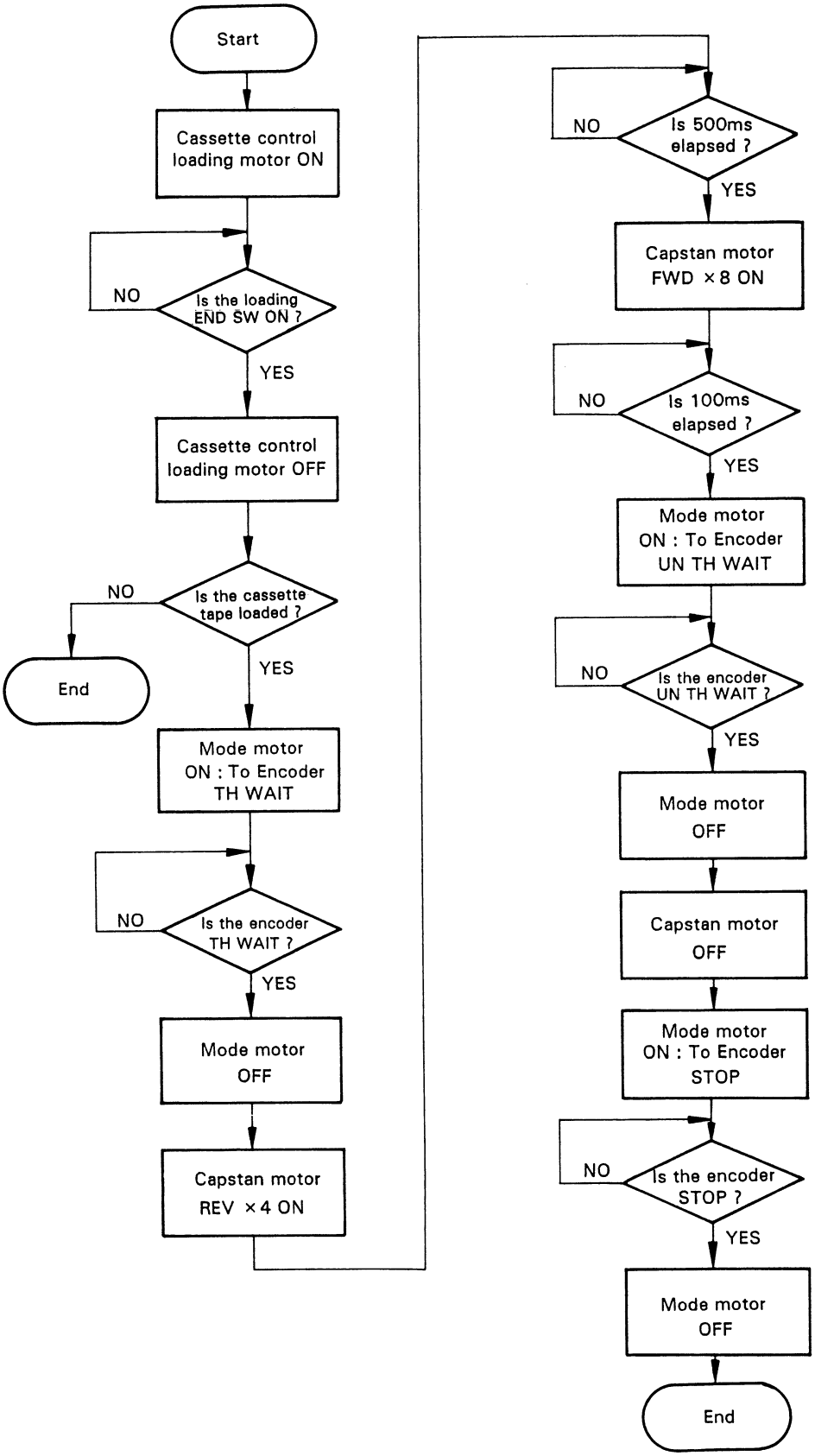
7.5 STOP → FF, REW



STOP
↓
CUE, REVIEW
↓
STOP and Mechanical mode transition

The encoder position remains at STOP.

7.6 OPEN → CLOSE → STOP



8. DAT CASSETTE TAPE OPERATION DESCRIPTION

When the cassette tape placed on the tray is slid into the main body, the protrusion at portion Ⓐ on the plate contacts portion Ⓑ of the tape. As shown in Fig. 8-1, the claw of portion Ⓑ is pushed up while the tape passes the protrusion on the plate. The protrusion on the plate then contacts the notch of the slider, and the slider gradually opens as shown in Fig. 8-1 as the tape enters the main body. At this point, when the claw of the tape moves down into the Hall in portion Ⓒ of the slider, the slider is retained open. Then, when the container moves down to mount the tape, the tape lid contacts the sensor bracket of the mechanical unit, pushing the lid up. At this time, portion Ⓓ of the lid contacts portion Ⓔ of the brake lever to remove the brake lever from the reel, so that the tape will be free.

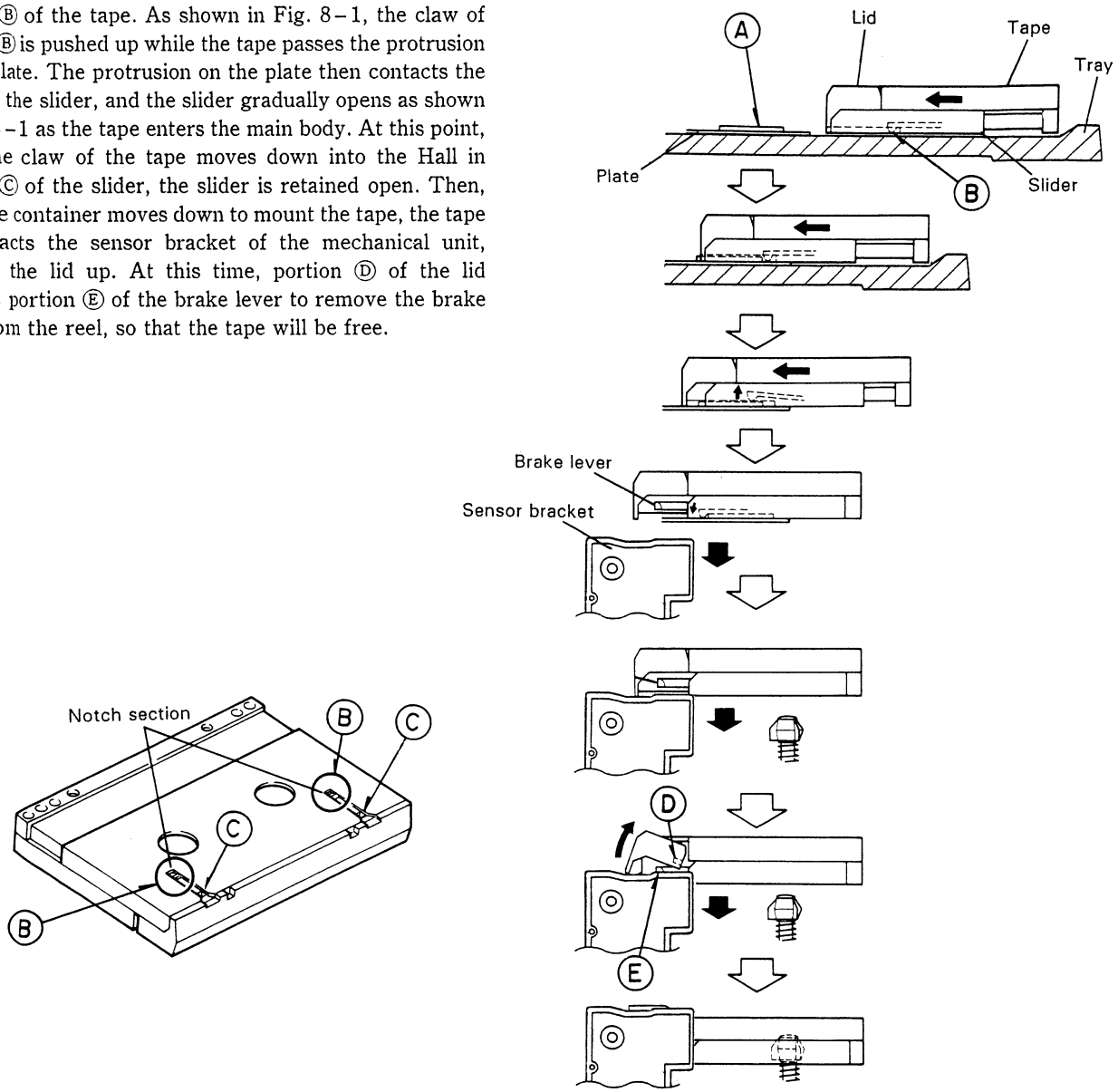


Fig. 8-1 Tape motion

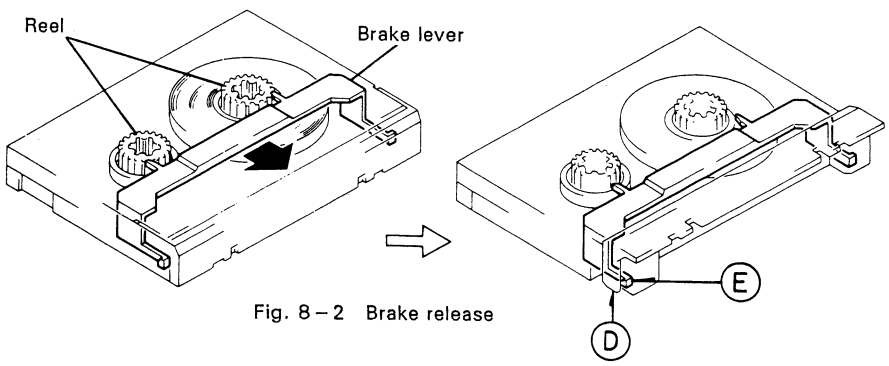


Fig. 8-2 Brake release

9. DAT MECHANICAL UNIT OPERATION DESCRIPTION

9.1 OUTLINE OF MECHANICAL SECTION

The mechanical section of this machine consists of driving DD motors each for the drum and the capstan, mode switch DC motor, plunger for reel brake ON/OFF. The mechanical status is detected by a 4-bit rotary encoder to control the mode change motor. (Fig. 9-1)

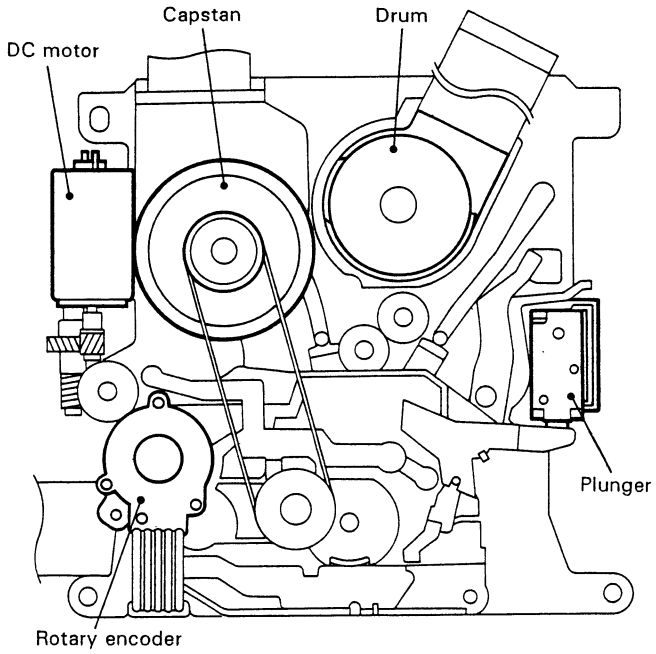


Fig. 9-1

9.2 BASIC MECHANICAL UNIT MODE

The mechanical unit uses the following four basic modes :

① Unthreading mode (Fig. 9-2)
② STOP mode (Fig. 9-3)
③ PLAY mode (Fig. 9-4)
④ FF/REW mode (Fig. 9-3)
[Although the mechanical operating state is the same as in the STOP mode, the reel is rotated by the capstan motor during brake OFF (plunger OFF) in the FF/REW mode.]

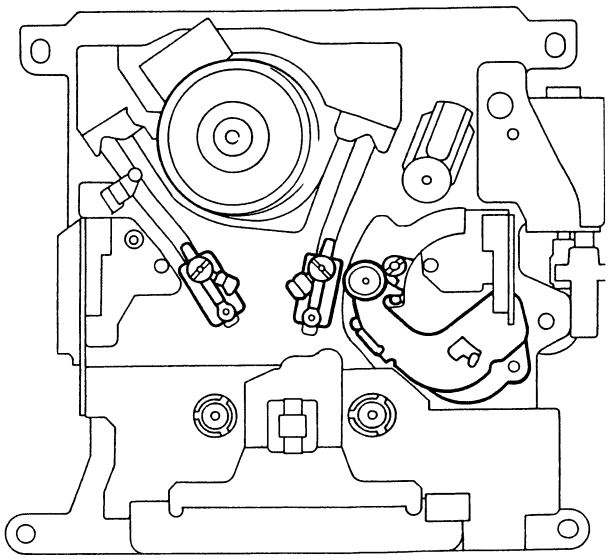


Fig. 9-2 Unthreading mode

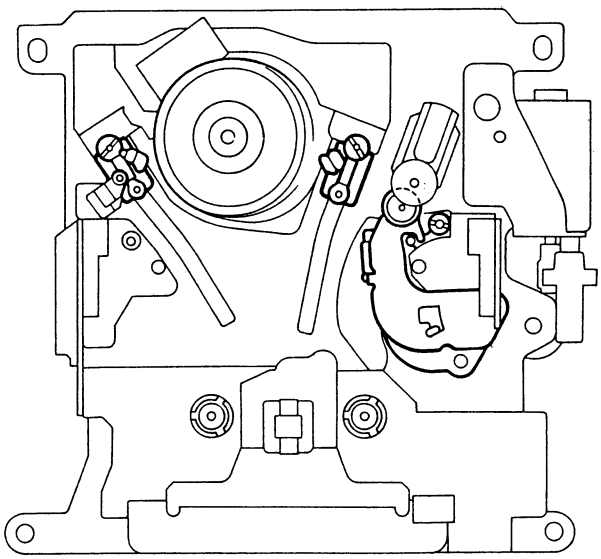


Fig. 9-3 STOP or FF/REW mode

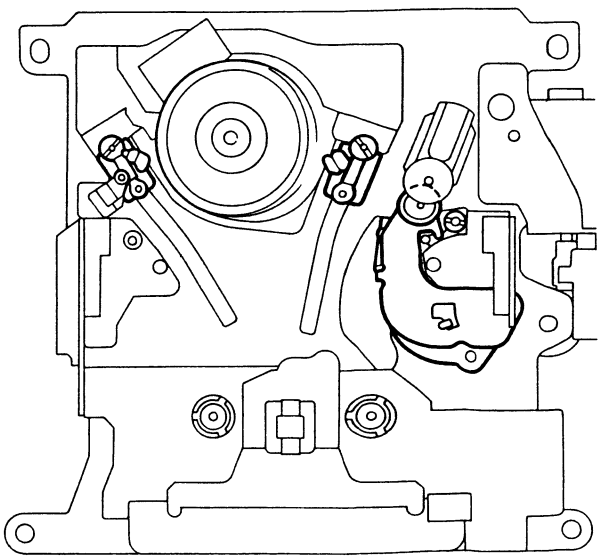


Fig. 9-4 PLAY mode

9.3 MODE CHANGE

The mechanical mode is changed as follows. The driving power transmission path of the power motor assembly (mode change motor) is shown in Fig. 9-5.

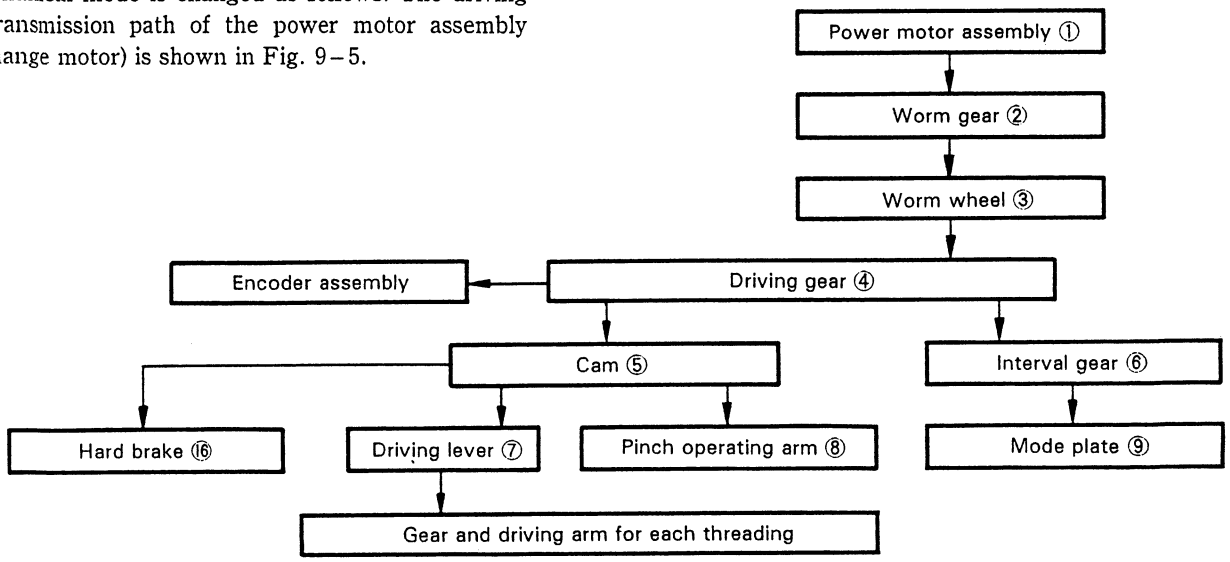
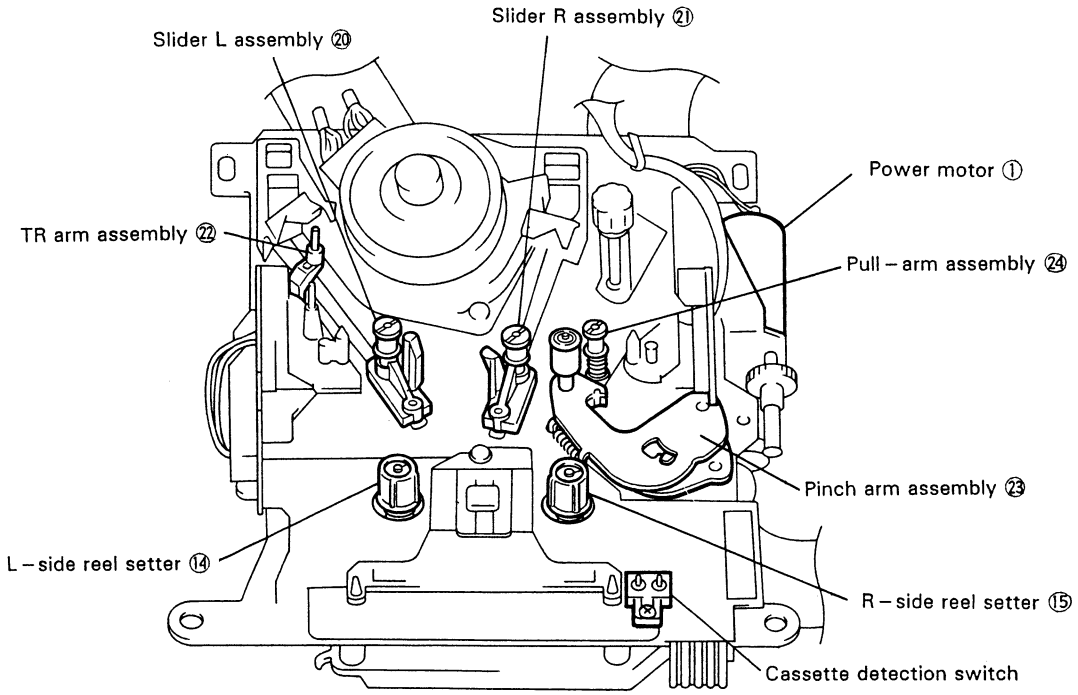


Fig. 9-5 Power transmission path block diagram

9.3.1 Unthreading Mode → STOP Mode (threading mode)

1. In the unthreading mode, the mechanical section is in the state shown in Fig. 9-6, in which the slider L assembly ⑳, R assembly ㉑, pinch arm assembly ㉓, and pull-arm assembly ㉔ are located on the front side.
2. When the cassette tape is loaded, the cassette detection switch is turned ON. Then, power motor ① starts rotating, and hard brake ⑯ fixes R-side reel setter ⑮. (See Fig. 9-9.)



NOTE : View from the top : hereinafter indicated Top

Fig. 9-6 Unthreading mode

3. Power motor ① rotates counterclockwise as shown in Fig. 9-7. The power is transmitted to worm gear ②, worm wheel ③, and driving gear ④ under the reel base assembly in that order.

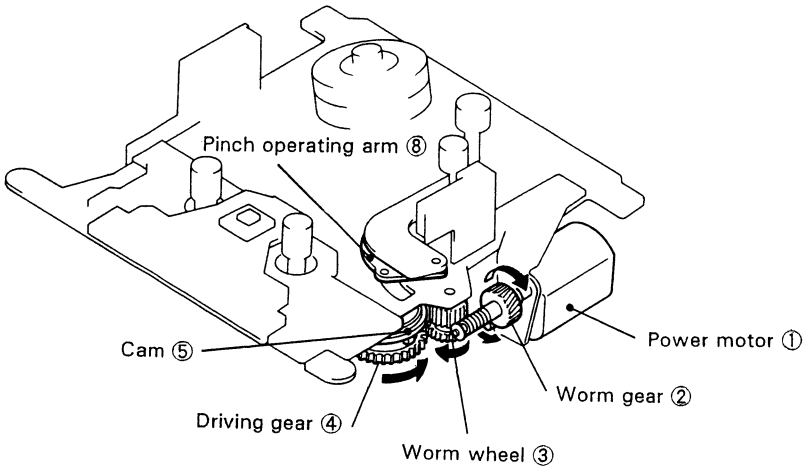
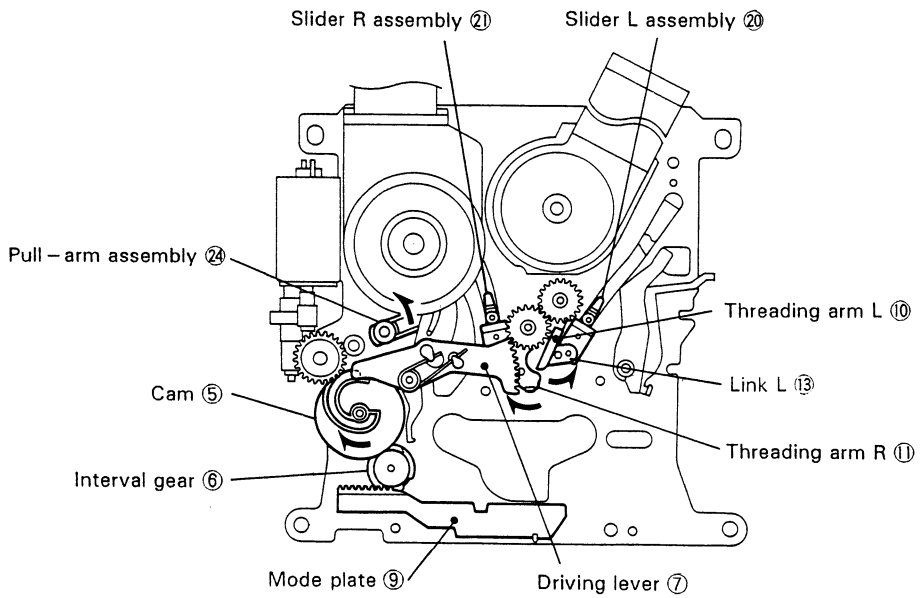


Fig. 9-7 (Top)

4. In the this power transmission method, driving gear ④ rotates in the direction indicated by the arrow shown in Fig. 9-7. (See Fig. 9-8 for the following.) Cam ⑤ rotating synchronously with driving gear ④ is directly connected to the upper side of driving gear ④ and also rotates in the arrow direction. The driving power of driving gear ④ is output to two systems of interval gear ⑥ and cam ⑤. Interval gear ⑥ performs the intermittent operation and is stopped until the STOP mode is set. Driving lever ⑦ interlocking with cam ⑤ rotates about 135° from the unthreading state shown in Fig. 9-8.

According to this motion, the power is transmitted to the arm driving gears. Pull-arm assembly ㉔ and threading arm L ⑩ rotate counterclockwise and threading arm R ⑪ rotates clockwise to start threading. Threading arm L ⑩ and slider L assembly ⑳ are linked via link L ⑬; the rotational power of threading arm L ⑩ generates the linear motion of slider L assembly ⑳. Threading arm R ⑪ also produces the same results.



NOTE : View from the bottom side : hereinafter indicated Bottom

Fig. 9-8

5. As threading arm L ⑩ and R ⑪ rotate, both slider L assembly ⑳ and R assembly ㉑ move along the groove of the mechanical chassis. As pull-arm assembly ㉔ rotates, pinch arm assembly ㉓ is pulled and starts rotating (see Fig.s 9-10 and 9-11). (At this time the tape is extracted from L-side reel setter ⑭ by sliders L ⑳, R ㉑, and pull-arm assembly ㉔.)

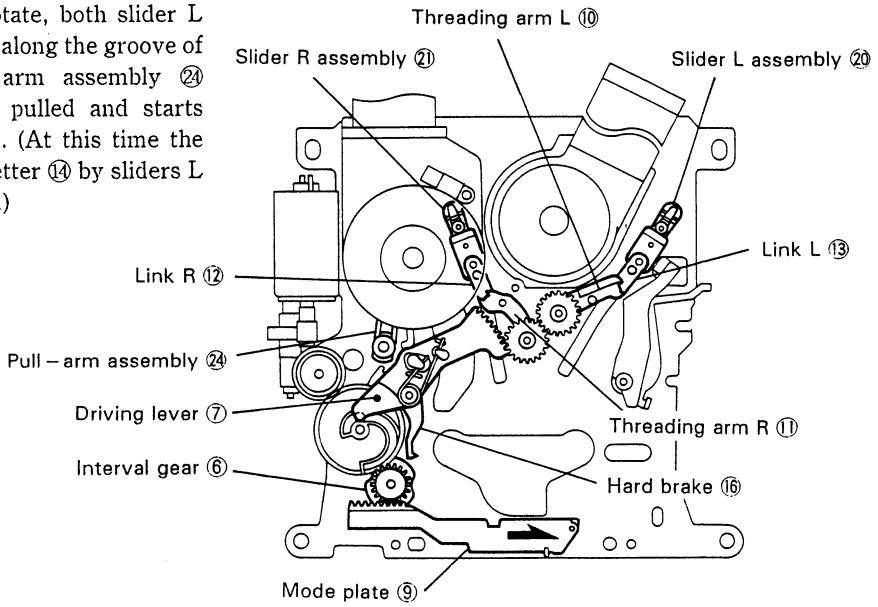
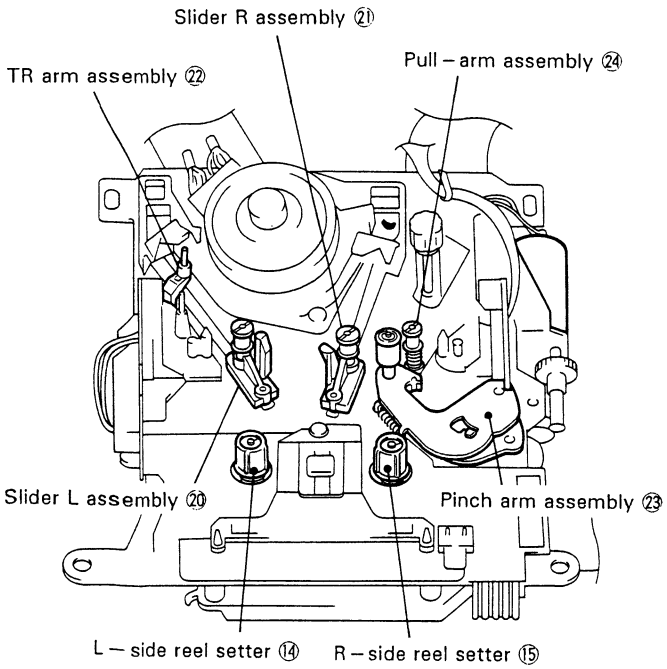


Fig. 9-9 (Bottom)

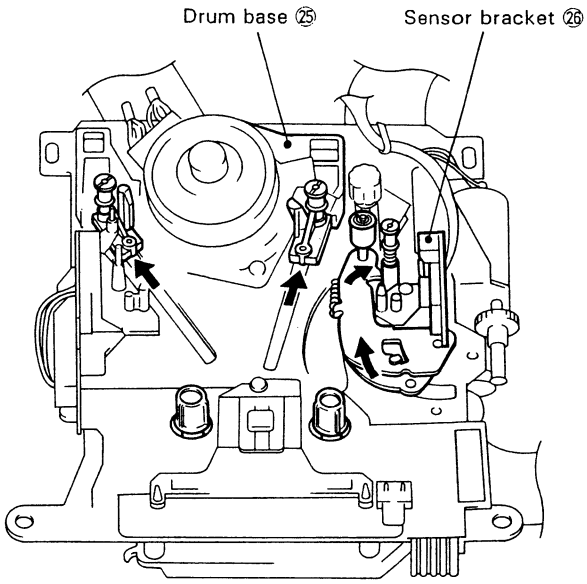
6. As driving gear ④ rotates, sliders L ⑳ and R ㉑ are press-fit into the groove of drum base ㉕; pull-arm assembly ㉔ is press-fit into sensor bracket R ㉖. At this time, if sliders L ⑳, R ㉑, and pull-arm assembly ㉔ stop, driving gear ④ continues rotating because it provides the specified press-fit force by the force of the spring in each gear.

Then, hard brake ⑯ stopping R-side reel setter ⑮ goes OFF to rotate the drum, completing the threading operation.



Unthreading state (Top)

Fig. 9-10



STOP state (Top)

Fig. 9-11

9.3.2 STOP, PLAY, REV, FF/REW operations

1. When the STOP state shown in Fig. 9-11 is set, the gear mode is as shown in Fig. 9-9. At this time, driving lever ⑦ is stopped and interval gear ⑥ can be rotated. Rotation of interval gear ⑥ moves mode plate ⑨ to the left and right. This motion of mode plate ⑨ determines the mode. Rotation of driving gear ④ causes interval gear ⑥ to rotate so that mode plate ⑨ will move to the left side viewed from the top, in Fig. 9-12. The motion of mode plate ⑨ is classified into four points as shown in Fig. 9-12. viewed from the bottom. As mode plate ⑨ moves, clutch drum ⑲ shown in Fig. 9-13 moves up and down to rotate REV brake ⑰ and TR lever ⑱ (Fig. 9-14).

However, for the pinch roller press-fit, the power is transmitted by cam ⑤ coaxial and synchronous with driving gear ④ from the bottom side to the top side of the mechanical chassis; cam ⑤ → pinch operating arm ⑧ (linked with pinch arm assembly and pinch press-fit spring ㉗ → pinch arm assembly ㉓ shown in Fig.s 9-15 and 9-16. When cam ⑤ rotates in the direction indicated by the arrow, pinch arm assembly ㉓ rotates in the press-fit direction.

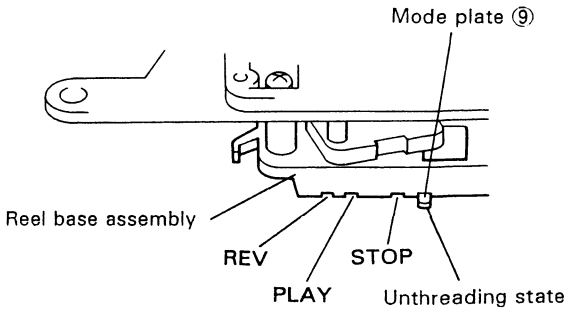


Fig. 9-12

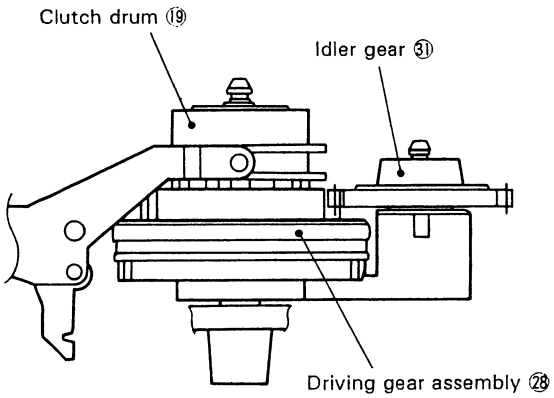


Fig. 9-13

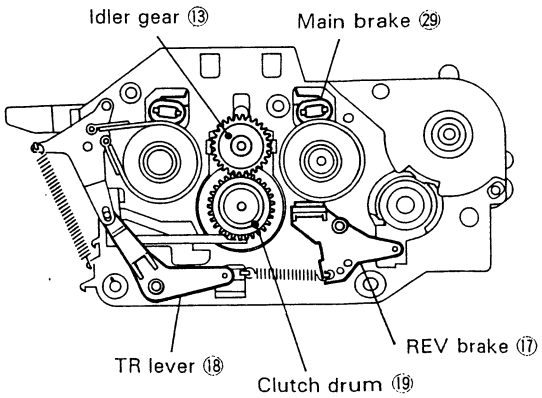


Fig. 9-14

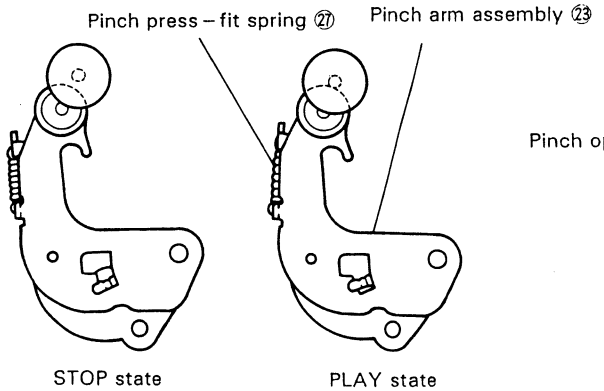


Fig. 9-15

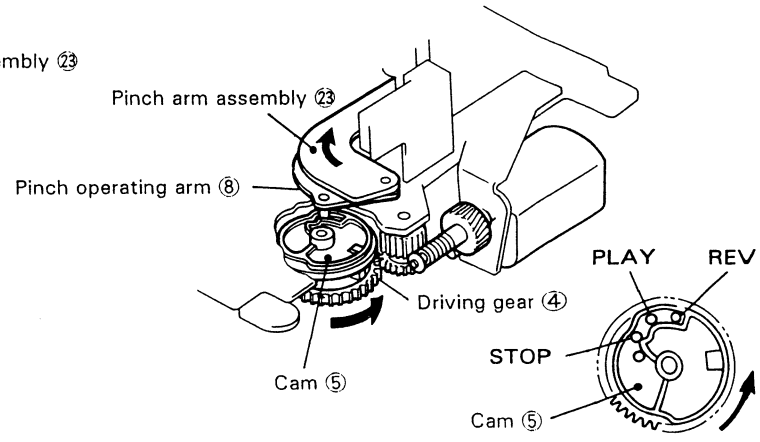


Fig. 9-16

2. Although clutch drum ⑲ moves up/down depending on the motion of mode plate ⑨, driving gear assembly ㉘ is limited in torque as shown in Fig. 9-13 (page 85) by the mechanism of the felt clutch placed between upper and lower gears. Downward motion of clutch drum ⑲ causes the upper and lower gears to be directly connected, activating FF/REW.
3. Main brake ㉙ works only when plunger ㉚ is ON. When the plunger is ON, clutch drum ⑲ is freed via change lever ㊲. Idler gear ㉛ oscillates to the left and right by the power transmitted from capstan ㉝ by belt ㉞ and transmits the power to the reel set. (See Fig.s 9-14 and 9-17.)
4. The following shows the operations in each mode : (See Table 1.)

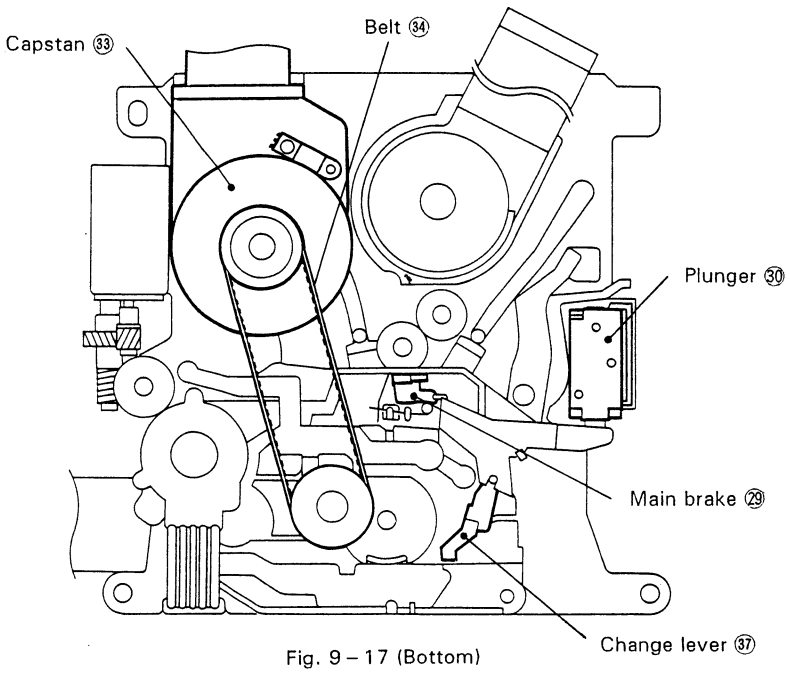


Fig. 9-17 (Bottom)

	Pinch Roller Press-fit	Clutch Drum	REV Brake	TR Lever
STOP	OFF	Down (locked)	OFF	STOP state
FF. REW (search mode)	OFF	Down (locked)	OFF	STOP state
PLAY. REC CUE. PAUSE	ON	Up (free)	OFF	PLAY state
REVIEW	ON	Up (free)	ON	STOP state

Table 1 Operation matrix

9.3.3 STOP Mode → Unthreading Mode

The basic operation is the reverse operation from the unthreading mode to the STOP mode. The main difference is to wind the tape into the cassette case.

1. Power motor ① rotates for a short time and fixes R-side reel setter ⑮ by hard brake ⑯.
2. Power motor ① rotates to start moving slider L and R assemblies ⑳ and ㉑, pull-arm assembly ㉔, and pinch arm assembly ㉓ (trying to return by the spring force) forward to the unthreading position along the groove, and simultaneously to rotate capstan ㉝, so that power is transmitted to L-side reel setter ⑭ via idler gear ㉛. Thus, guides move from the STOP position to the unthreading position while L-side reel setter ⑭ winds the tape.
3. When all the guides are housed in the cassette tape cas power motor ① stops. For a while after the motor stop L-side reel setter ⑭ is rotated to completely wind th tape, then the capstan motor is stopped to stop L-sic reel setter ⑭.
4. Power motor ① is rotated to release hard brake (locking R-side reel setter ⑮, and power motor ① stopped to terminate the operation.

9.3.4 Tape Pass

The following diagram shows the path as the tape is wound from L-side reel setter ⑭ to R-side reel setter ⑮ in PLAY mode. The tape is shown by the thick line in the diagram.

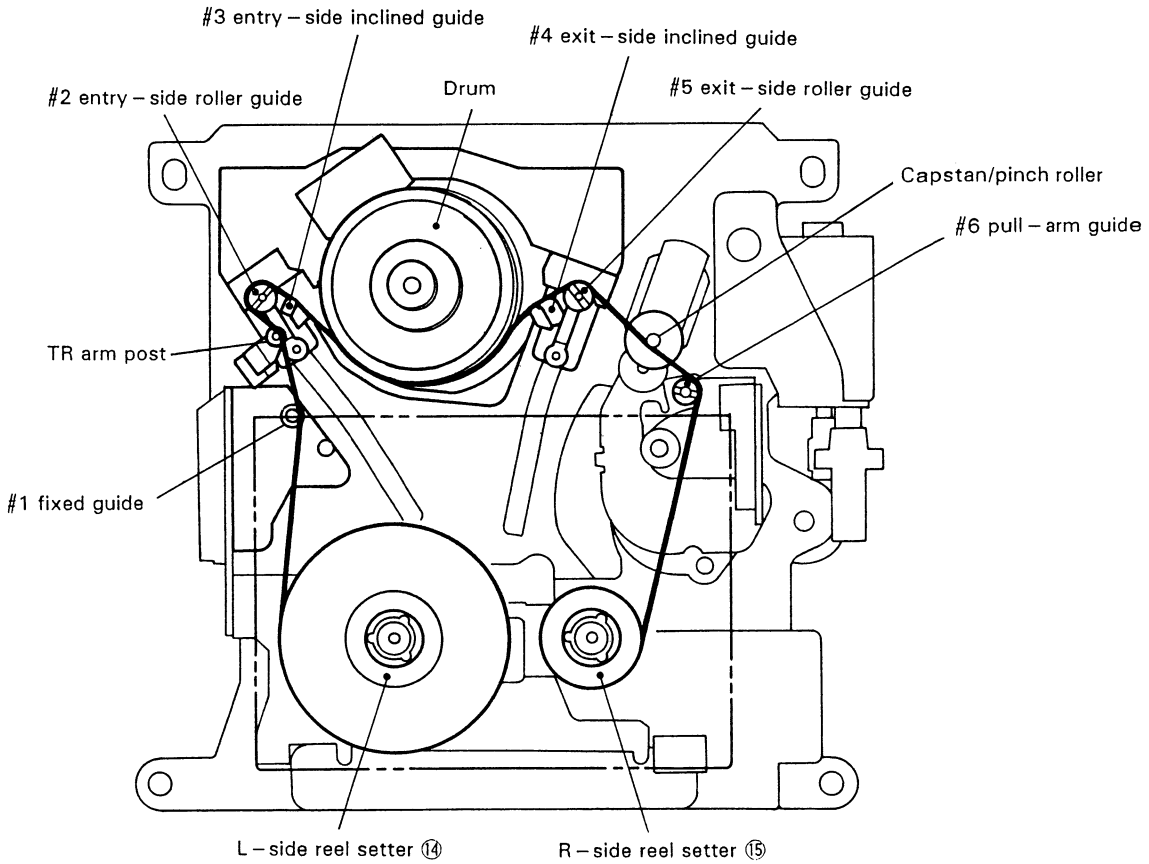
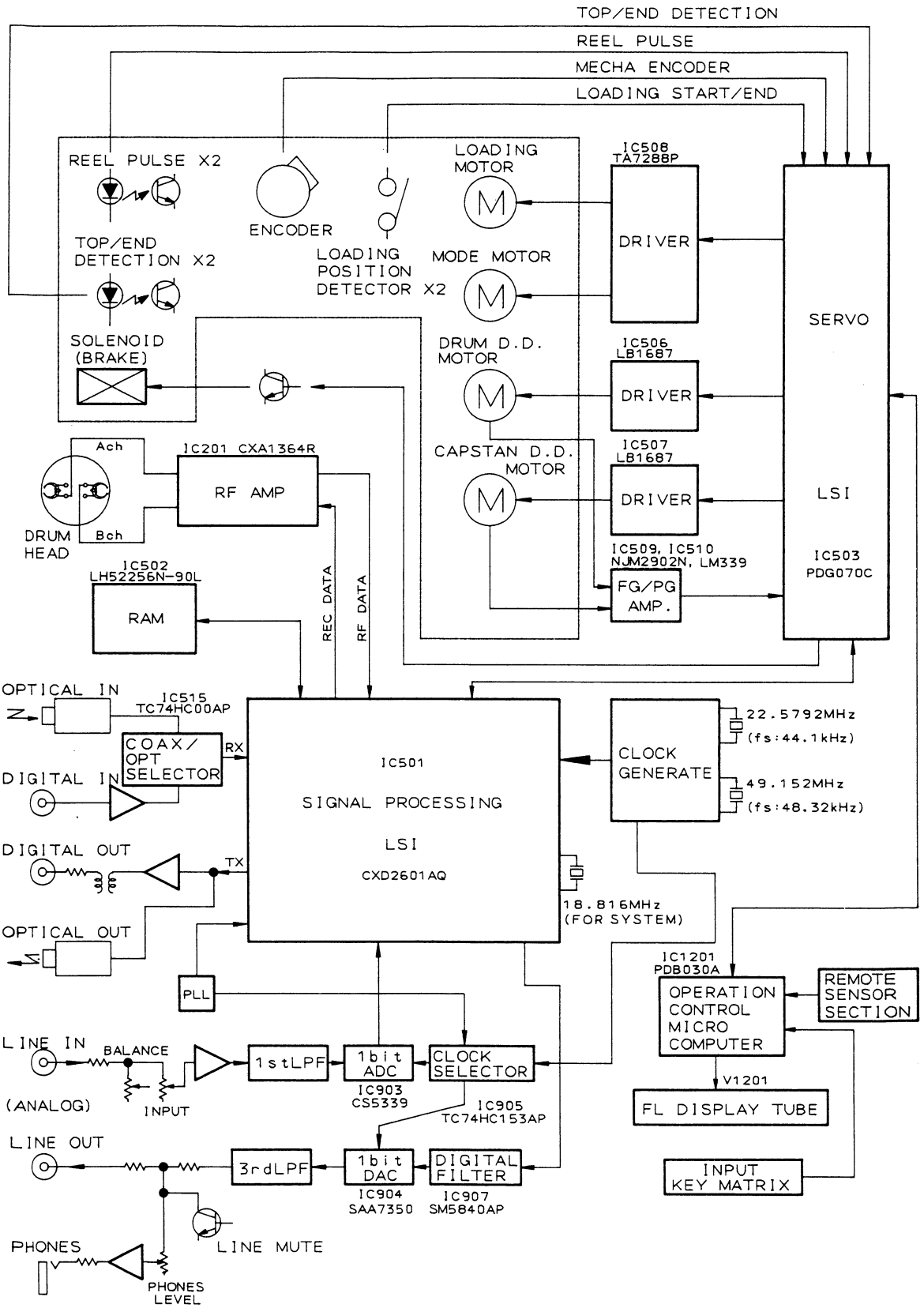


Fig. 9-18 (Top)

10. BLOCK DIAGRAM



11. IC INFORMATION

As to the block diagrams of IC201, 501, 506, 507, 513 and 903, refer to pages 13 – 15.

■ IC201 (CXA1364R) : RF RECORDING/PLAYBACK AMPLIFIER

● Pin Function

No.	Pin Name	Description
1	LIM OUT	PB limiter output terminal.
2	LIM GND	GND terminal of PB limiter and RF envelope DET.
3	MOD1 IN	Operation mode change logic input terminal.
4	MOD2 IN	
5	LIM Vcc	Vcc terminal of PB limiter and RF envelope DET.
6	ENV OUT	RF envelope DET output terminal.
7	ENV COMP	Threshold voltage regulation terminal of RF envelope.
8	ENV PEAK	Capacitor connection terminal for holding the RF peak.
9	LIM IN	Input terminal of PB limiter and RF envelope DET.
10	EQ OUT	PCM EQ output terminal.
11	P EV OUT	Capacitor connection terminal for pilot envelope output terminal/peak hold.
12	P EV IN	Pilot GCA input terminal.
13	PLT OUT	Pilot filter output terminal.
14	GCA CTL	Pilot GCA gain control voltage input terminal.
15	EQ PHASE	Terminal for determining the PCM EQ phase characteristics.
16	EQ Q	Terminal for determining the PCM EQ high – pass peak volume.
17	EQ HIGH	Terminal for determining the PCM EQ high – pass peak frequency and pilot filter cut off frequency.
18	EQ LOW	Terminal for determining the PCM EQ low – pass characteristics.
19	PB GND	GND of PB circuit, logic, and regulator.
20	EQ IN	PCM EQ input terminal.
21	SWA OUT	Switch amplifier output terminal.
22	V REG	Regulator output terminal.
23	B HA OUT	Bch head amplifier output terminal.
24	B LPC	DC smoothing capacitor connection terminal of Bch head amplifier DC servo.

No.	Pin Name	Description
25	B PC	Emitter pass control connection terminal of Bch head amplifier first – stage emitter grounding Tr.
26	B HA IN	Bch head amplifier input terminal.
27	B RA OUT	Bch REC amplifier output terminal.
28	HA GND	Head amplifier GND terminal.
29	REC GND	REC amplifier GND terminal.
30	REC BIAS	REC last – stage current amplifier input terminal.
31	HA Vcc	Head amplifier Vcc terminal.
32	REC Vcc	REC amplifier Vcc terminal.
33	A RA OUT	Ach REC amplifier output terminal.
34	A HA IN	Ach head amplifier input terminal.
35	A PC	Emitter pass control connection terminal of Ach head amplifier first – stage emitter grounding Tr.
36	ALPC	DC smoothing capacitor connection terminal of Ach head amplifier DC servo.
37	A HA OUT	Ach head amplifier output terminal.
38	SAG TC	Capacitor connection terminal for correcting the record waveform distortion.
39	A R PCM	Terminal for determining Ach record current.
40	B R PCM	Terminal for determining Bch record current.
41	A R PLT	Terminal for determining Ach pilot signal record current.
42	B R PLT	Terminal for determining Bch pilot signal record current.
43	PB Vcc	Vcc of PB circuit, logic, and regulator.
44	REDT IN	Record signal input terminal.
45	REPB IN	Record/playback change signal input terminal.
46	PIPC IN	PCM/pilot record area change signal input terminal
47	SWP IN	A/B change switching signal input terminal.
48	NRM HLF	Normal speed/half speed change signal input terminal.

■ IC506, IC507 (LB1687) : MOTOR DRIVER

● Pin Function

No.	Pin Name	Description
1	VIN1	Phase – V Hall element input terminal. Logic"H" is VIN1 > VIN2.
2	VIN2	
3	UIN1	Phase – U Hall element input terminal logic"H" is UIN1 > UIN2.
4	UIN2	
5	FC	Frequency characteristics correction terminal
6	GND	GND for other than output
7	FRAME (GND)	GND
8		
9		
10	Vcc 1	Power terminal providing output
11	U OUT	Phase – U output terminal
12	V OUT	Phase – V output terminal
13	W OUT	Phase – W output terminal
14	Rf	Output current detection terminal
15	NC	Not Connect
16	Vcc 2	Power terminal providing power to parts other than output

No.	Pin Name	Description
17	FG in –	FG signal input terminal
18	FG in +	
19	FG OUT	FG amplifier output terminal
20	CR	Hall element input gain can be altered by the voltage of this terminal.
21	VCREF	Control start voltage is determined by the voltage of this terminal.
22	FRAME (GND)	GND
23		
24		
25	VC	Speed single – phase control terminal
26	CD	Receives the current detected by Rf (14 pins).
27	F/RC	F/RC : Normal/reverse control terminal
28	NC	Not Connect
29	WIN1	Phase – W Hall element input terminal. Logic"H" is WIN1 > WIN2.
30	WIN2	

• Truth Table

	Source Sink	Input			Normal/reverse control F/RC
		U	V	W	
1	Phase W → V	H	H	L	L
	Phase V → W				H
2	Phase W → U	H	L	L	L
	Phase U → W				H
3	Phase V → W	L	L	H	L
	Phase W → V				H
4	Phase U → V	L	H	L	L
	Phase V → U				H
5	Phase V → U	H	L	H	L
	Phase U → V				H
6	Phase U → W	L	H	H	L
	Phase W → U				H

● Input

H : Input 1 is at 0.2V potential or much higher than input 2 in each phase.

L : Input 1 is at 0.2V potential or much lower than input 2 in each phase.

● Normal/Reverse Control

H : 2.0 to Vcc2

L : 0 to 0.3V

■ IC503 (PDG070B) : SYSTEM CONTROLLER

• Pin Function

No.	I/O	Pin Name	Description
1	O	AUDR	Signal processing LSI (CXD2601AQ) operating mode change output. "H" for audio mode. Becomes "L" for data mode during postrecording.
2	O	SOLON	Mechanism solenoid brake control output. "H" for brake ON.
3	O	MLMCW	Rotational direction control output of mechanism mode motor and cassette control loading motor. "H" for clockwise rotation.
4	O	LDMON	Cassette control loading motor control output. "H" for loading motor ON.
5	O	MDMON	Mechanism mode motor control output. "H" for mode motor ON.
6	O	TLED	Tape top/end sensor LED on/off control output. LED blinks on a cycle of 3.48ms.
7	O	CMCW	Mechanism capstan motor rotational direction control output. "H" for clockwise rotation. (FWD direction running)
8	O	DMCW	Mechanism drum motor rotational direction control output. "H" for clockwise rotation. (Always "H")
9	O	xCMON	Mechanism capstan motor control output. "H" for capstan motor ON.
10	O	NC	Not used. Retain open.
11	I	LDST	Cassette control loading start detection switch input. "H" for cassette control loading start. ("L" for cassette control unloading completion.)
12	I	xLDEN	Cassette control loading end detection switch input. "L" for cassette control loading completion. ("H" for cassette control unloading start.)
13	I	INH	Cassette tape accidental erase prevention detection switch input. "H" for recording inhibition.
14	I	xHALF	Cassette tape detection switch input. "L" for presence of cassette tape.
15	I	ENC1	Mechanism encoder input 1.
16	I	ENC2	Mechanism encoder input 2.
17	I	ENC3	Mechanism encoder input 3.
18	I	ENC0	Mechanism encoder input 0.
19	O	xRST	Operation control reset output. "L" for operation control reset. "L" is output when the power is ON.
20	O	xOPRQ	Output of communication request to operation control. Operation control starts communications with the system control at the xOPRQ trailing edge. Becomes "L" during communication with the operation control.
21	O	x256	Fs system clock select output. "L" for selecting 256fs. Becomes "H" during 32K playback or 32K analog input recording; "L" during other operation.
22	O	LMUTE	Line mute (analog mute) output. "H" for line mute ON.
23	O	PB4832	Fs system clock select output. Becomes "L" during 44.1K playback or digital input recording; "H" during other operation.
24	O	PLLK	Digital input PLL lock range change control output. Alternatively changes between "L" ⟷ "H" during PLL unlock.
25	O	DIN	Fs system clock select output. Becomes "H" during digital input recording.

No.	I/O	Pin Name	Description
26	O	xDARS	DA-side digital filter (SM5840AP) and AD converter (CS5339) reset output. Becomes "L" during Fs and REC/PB switching or when the power is ON. Normally, "H".
27	O	44PB	Fs system clock select output. Becomes "H" during 44.1K playback ; "L" during other operation.
28	O	xMLE	DA-side digital filter (SM5840AP) mode set latch-enable output. Mode set data is latched at the xMLE leading edge.
29	O	OCSL	Digital input OPT (optical cable)/COAX (coaxial cable) select output. Becomes "L" when OPT is selected.
30	I	MUTE	PB/REC mute (digital mute) output. Connect to the signal processing LSI (CXD2601AQ) MUTE terminal (29 pins). Mutes DA monitor during playback and recorded PCM data during recording.
31	I	MP	Microprocessor mode input terminal. Always fixed to "L" level.
32	I/O	RST	System reset terminal. "L" level active. Connect to the reset IC output.
33		DGND	GND terminal. Connect to GND.
34		NC	Not used. Retain open.
35	I	MCLK	System clock input terminal. Connect to signal processing LSI (CXD2601AQ) MCLK terminal (20 pins). Inputs 9.408MHz.
36	I	SBSY	Frame synchronizing signal input. Connect to signal processing LSI (CXD2601AQ) SBSY terminal (26 pins). Pulse waveform of 30ms cycle during SP and 60ms cycle during LP. (_┌┐_)
37	I	SDSo	Serial data input terminal. Connect to signal processing LSI (CXD2601AQ) SDSO terminal (25 pins).
38	O	SDDI	Serial data output terminal. Connect to signal processing LSI (CXD2601AQ) SDSI terminal (24 pins).
39	O	EXCK	Serial data transfer clock output terminal. Connect to signal processing LSI (CXD2601AQ) EXCK terminal (23 pins).
40	I	NC	Not used. Fixed to "H" level.
41	I	OPSI	Serial data input terminal. Inputs serial data from operation control.
42	O	OPSO	Serial data output terminal. Outputs serial data to operation control. Also, outputs mode set data to DA-side digital filter (SM5840AP) in time-sharing mode.
43	I/O	OPCK	Serial data transfer clock input/output terminal. Inputs serial data transfer clock from operation control. Also, outputs mode set data transfer clock to DA-side digital filter (SM5840AP) in time-sharing mode.
44		AGND	GND terminal of integral AD converter. Connect to GND.
45		AVREF	Reference voltage input terminal of integral AD converter. Connect to 5V.
46		A5V	Positive power supply terminal of integral AD converter. Connect to 5V.
47	I	SWPVR	Switching pulse (SWP) delay volume setting VR input terminal. (Analog input terminal)
48	I	MUTM	Connect to signal processing LSI (CXD2601AQ) MUTM terminal (30 pins). Monitors the intelligent muting state.
49	I	NC	Not used. Fixed to "H" level.
50	I	NC	Not used. Fixed to "H" level.

No.	I/O	Pin Name	Description
51	I	RFENV	RF envelope signal input terminal. Used to detect RF Signal.
52	I	TEND	Tape end sensor input. (Analog input terminal)
53	I	TTOP	Tape top sensor input. (Analog input terminal)
54	I	PLENV	Pilot envelope signal input terminal.
55	I	RFGT	Reel FG-T (take-up side) input terminal.
56	I	RFGS	Reel FG-S (supply side) input terminal.
57	I	CFG	Capstan FG input terminal.
58	I	DFG	Drum FG input terminal.
59	I	DPG	Drum PG input terminal.
60	I	DREF	Drum servo reference signal input terminal.
61	I	MCLK	Channel clock input terminal.
62	I	RFDT	Playback data input terminal.
63	O	SWP	Switching pulse (SWP) output terminal.
64	O	DERR	Drum servo/error voltage output terminal.
65	O	CERR	Capstan servo/error voltage output terminal.
66	O	NC	Not used. Retain open.
67	O	NC	Not used. Retain open.
68	O	PLGCA	RF amplifier (CXA1364R)/pilot GCA control voltage output terminal.
69	I	SYMN	RF-responding C1 check result monitor signal input.
70	I	ERMN	Valid playback data detection signal monitor signal input. "H" for presence of valid playback data. Used to detect RF signal.
71	I	xPOFF	Power-off signal input. Used for processing when power is OFF.
72		D5V	Positive power supply terminal. Connect to 5V.
73		DGND	GND terminal. Connect to GND.
74		D5V	Positive power supply terminal. Connect to 5V.
75	O	ATSY	ATF sink signal output.
76	O	NC	Not used. Retain open.
77	O	NC	Not used. Retain open.
78	O	NC	Not used. Retain open.
79	O	MOD2	RF amplifier (CXA1364R) operation mode change signal output 2.
80	O	MOD1	RF amplifier (CXA1364R) operation mode change signal output 1.

■ IC501 (CXD2601AQ) : PLAYBACK SIGNAL PROCESSING LSI

• Pin Function

No.	Pin Name	I/O	Description
1	A08	O	External RAM address output.
2	A09	O	External RAM address output.
3	VDD	–	+5V
4	A10	O	External RAM address output.
5	A11	O	External RAM address output.
6	A12	O	External RAM address output.
7	A13	O	External RAM address output.
8	A14	O	External RAM address output.
9	XWE	O	External RAM write-enable signal output.
10	XOE	O	External RAM output-enable signal output.
11	XEAN	O	External addressing-enable signal output.
12	TST1	I	Fixed to test input 'L'.
13	XTIO	O	Crystal oscillation circuit 1 output (oscillation frequency : 18.816MHz).
14	XTII	I	Crystal oscillation circuit 1 input
15	VSS	–	GND
16	XRST	I	Reset when reset input is 'L'.
17	CLKO	O	18.816MHz clock output.
18	XCST	O	SYCK (system clock) generation synchronizing signal output.
19	ATSY	I	ATF sink signal input.
20	MCLK	O	9.408MHz clock output.
21	DREF	O	Drum servo reference signal output
22	SBPM	O	Monitor signal output of data transfer with microcomputer. 'L' for transferable.
23	EXCK	I	Clock input for data transfer with microcomputer.
24	SDSI	I	Serial data input from microcomputer.
25	SDSO	O	Serial data output to microcomputer.
26	SBSY	O	Frame synchronizing signal output for data transfer with microcomputer.
27	COPY	O	Copy information output. 'H' for inhibiting copy.

No.	Pin Name	I/O	Description
28	EMP	O	Emphasis information output. 'H' for emphasis-on.
29	MUTE	I	Mute input. 'H' for muting.
30	MUTM	O	Mute output. 'H' for muting.
31	UNLK	O	RXPLL lock monitor signal output. 'L' indicates locked.
32	ERMN	O	Effective playback data detection signal output. 'H' for presence of effective playback data.
33	SYMN	O	RF-responding C1 check result monitor signal output.
34	CHER	I	Corrected strategy select input. 'H' for C1 → C2 and 'L' for C1 → C2 → C1 → C2.
35	PLCK	O	RFPLL clock output.
36	TST2	I	Fixed to test terminal 'L'.
37	RFDT	I	Playback RF signal input.
38	XCS	I	Chip select input for data transfer with microcomputer. 'L' for transferable.
39	SWP	I	RF switching pulse. 'L' for track A and 'H' for track B.
40	VSS	–	GND
41	PIPC	O	ATF pilot signal/OR-NOT identification signal output of record signal. 'H' for pilot signal.
42	REPB	O	REC/PB identification signal output. 'H' for REC state.
43	REDT	O	Record signal output.
44	TST4	I	Fixed to test terminal 'L'.
45	$\overline{PDO}$	O	RXPLL phase comparator output.
46	AMPI	I	Amplifier input.
47	$\overline{AMPO}$	O	Amplifier output, reverse output of AMPI.
48	PLCO	I	Externally-installed VCO clock input of RXPLL (512fs as reference).
49	PLVR	O	RXPLL phase comparison signal output (2fs generated from PLL clock).
50	PLRF	O	RXPLL phase comparison signal output (RX SYNC detection signal 2fs).

No.	Pin Name	I/O	Description
51	MSSL	I	Master/slave mode select. 'H' for master.
52	RX	I	Digital interface signal input.
53	VDD	–	+5V
54	TX	O	Digital interface signal output.
55	AUDR	I	Audio/data record mode select. 'H' for audio mode.
56	EXSY	I/O	External synchronizing signal input/output. Normally connected to EXSN.
57	EXSN	I/O	External synchronizing signal input/output. Normally connected to EXSY.
58	F128	I/O	256fs signal output during 128fs double speed.
59	F256	O	256fs signal output.
60	F512	O	512fs signal output.
61	ADLF	I	LSB/MSB first select input of ADDT serial data. 'H' for LSB first.
62	DALF	I	LSB/MSB first select input of DADT and DADO serial data. 'H' for LSB first.
63	XT2O	O	Crystal oscillation circuit 2 output (oscillation frequency = 22.5792MHz).
64	XT2I	I	Crystal oscillation circuit 2 input.
65	VSS	–	GND
66	XT3O	O	Crystal oscillation circuit 3 output (oscillation frequency: 49.152 MHz, 24.576MHz for half relative speed mechanical).
67	XT3I	I	Crystal oscillation circuit 3 input.
68	FSEN	I	F128, BCK, LRCK input/output select input. 'H' for output.
69	LR03	O	Reverse signal of LR02.
70	LR02	O	16BCK delay signal of LRCK.
71	LR01	O	15BCK delay signal of LRCK.
72	LRCK	I/O	2fs signal input/output during fs double speed.
73	WCK	O	4fs signal output during 2fs double speed.
74	XBCK	O	Reverse signal output of BCK.

No.	Pin Name	I/O	Description
75	BCK	I/O	128fs signal input/output during 64fs double speed.
76	ADDT	I	AD serial data output.
77	DADT	O	DA serial data output.
78	DADO	I	Digital-out audio data input (normally connected to DADT).
79	ADDI	O	Digital-in audio data output.
80	ADDN	I	Digital-in audio data input (normally connected to ADDI).
81	ERRI	I	Digital-out validity flag data input (normally connected to ERRF).
82	ERRF	O	Interpolating data/OR-NOT identification signal output of DADT data. 'H' for interpolating data.
83	MNTG	O	'H' indicates the error correction state monitor data is now output to D7 to D0.
84	D7	I/O	External RAM data input/output (MSB).
85	D6	I/O	External RAM data input/output.
86	D5	I/O	External RAM data input/output.
87	D4	I/O	External RAM data input/output.
88	D3	I/O	External RAM data input/output.
89	D2	I/O	External RAM data input/output.
90	VSS	–	GND
91	D1	I/O	External RAM data input/output.
92	D0	I/O	External RAM data input/output (LSB).
93	A00	O	External RAM data input/output.
94	A01	O	External RAM data input/output.
95	A02	O	External RAM data input/output.
96	A03	O	External RAM data input/output.
97	A04	O	External RAM data input/output.
98	A05	O	External RAM data input/output.
99	A06	O	External RAM data input/output.
100	A07	O	External RAM data input/output.

■ IC903 (CS5339) : A/D CONVERTER

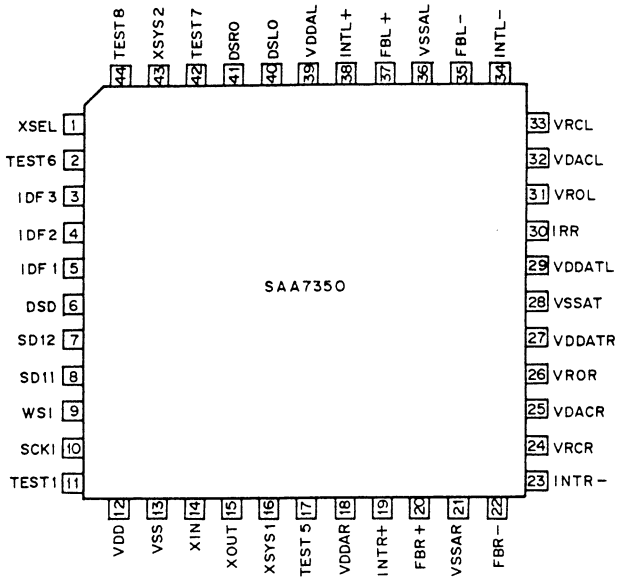
● Pin Function

No.	Pin Name	I/O	Description
1	AGND	—	Analog part. Analog ground pin.
2	AINL	I	Lch analog input pin.
3	ZEROL	I	Lch zero level input pin. The input voltage of this pin is normally used as the zero level to calibrate the Lch offset.
4	VA+	—	Analog part. Analog positive power supply pin, +5V.
5	VA−	—	Analog part. Analog negative power supply pin, −5V.
6	APD	I	Analog part. Power-down pin. "H" for power-down mode.
7	ACAL	I	Analog calibration pin. The external signal input pin is changed depending on this pin level. H : Zero level input pin (ZEROL,ZEROR) L : Analog input pin (AINL,AINR)
8	NC	—	Unconnected pin (open).
9	DCAL	O	Digital calibration pin. Indicates offset calibration in execution. Connected to ACAL pin in each part. Rises immediately when the power-down signal is input to the DPD pin, becomes "L" when 4096L/$\overline{R}$ cycle (approx. 85ms when sampling frequency fs = 48kHz) has passed after the DPD pin trailing edge, and indicates the termination of the calibration.
10	DPD	I	Digital part. Power-down pin. "H" for power-down mode. Offset calibration is started from trailing edge.
11	TST	I	Test pin.
12	CMODE	I	Master clock select pin. "L" : CLK = 256fs (12.288MHz at fs = 48kHz) "H" : CLK = 384fs (18.432MHz at fs = 48kHz)
13	SMODE	I	Interface clock select pin. Sets input/output of L/$\overline{R}$, SCLK, and FSYNC clock pins. L : Slave mode (all input pins) H : Master mode (all output pins)
14	L/$\overline{R}$	I/O	Input channel select pin. Slave mode : Inputs fs clock. Lch MSB data is output at the leading edge and Rch MSB data is output at the trailing edge. Master mode : Outputs fs clock. SDATA is output 1SCLK later than L/$\overline{R}$ edge. "H" during power-down (DPD = "H").
15	SCLK	I/O	Serial data clock pin. 1bit of output data is output at the trailing edge of this pin. Slave mode : Inputs 32fs to 64fs clock. Master mode : Outputs 64fs clock. "L" during power-down (DPD = "H")
16	SDATA	O	Serial data output pin. Data is 2's complement and is output sequentially from MSB. After 16 bits output, 3-bit over/under-scale flag and L/$\overline{R}$ flag are output.
17	FSYNC	I/O	Frame synchronizing clock pin. Slave mode : Enables SDATA output when "H". Master mode : Outputs 2 fs clock. Becomes "H" during output of 16-bit data and can be used for data latch. "L" during power-down (DPD = "H").
18	VD+	—	Digital part. Power supply pin, +5V.
19	DGND	—	Digital part. Grounding pin.

No.	Pin Name	I/O	Description
20	CLK	I	Master clock input pin. CMODE = "H" : 384fs CMODE = "L" : 256fs
21	OCLK	O	128fs clock output pin. Toggles at master clock (CLK) trailing edge. "L" during power-down (DPD = "H").
22	NC	—	Unconnected pin
23	ICLK	I	128fs clock output pin. Analog part clock. Sampling rate of modulator is 64fs.
24	LGND	—	Analog part. Logic grounding pin.
25	VL+	—	Analog part. Logic power supply pin, +5V.
26	ZEROR	I	Rch zero level input pin. The input voltage of this pin is normally used as the zero level to calibrate the Rch offset.
27	AINR	I	Rch analog input pin.
28	VREF	O	Reference voltage output pin, −3.68V. The input signal full-scale depends on this voltage. FS = ±3.68V whenVREF = −3.68V.

■ IC904 (SAA7350) : D/A CONVERTER

● Pin Assignment



● Pin Function

No.	Pin Name	Description
1	XSEL	Used for crystal oscillation frequency select and master crystal oscillation frequency. XSEL : HIGH = 384fs XSEL : LOW = 256fs XSEL is set to HIGH as a default value when not connected.
2	TEST6	Test 6 : Open this terminal.
3	IDF3	Input data format. These three terminals determine the input format. Set to HIGH as the default value when disconnected.
4	IDF2	
5	IDF1	
6	DSD	Digital mute ON/OFF change. "L" = Inoperative. "H" or "NC" = Operative.
7	SDI2	Serial data input. Used in the simultaneous mode only. Internally pulled up to "H" when unused (Rch signal).
8	SDI1	Serial data input. 16-, 18-, or 20-bit linear binary PCM signal. Used as Lch signal in the simultaneous mode.
9	WSI	Serial input word select signal. Shows the data word is for Lch or Rch. Becomes fs, 2fs, 4fs, or 8fs. Fs can be set between 16kHz and 53kHz.
10	SCKI	Serial input interface bit clock input.
11	TEST1	Test 1 : Open this terminal.
12	VDD	+5V (digital power supply).
13	VSS	GND (digital ground).
14	XIN	Crystal oscillator input.
15	XOUT	Crystal oscillator output.
16	XSYS1	Oscillator buffer output.
17	TEST5	Test 5 : Set to "L" in the normal state.
18	VDDAR	Rch analog 5V power supply.

No.	Pin Name	Description
19	INTR+	Output from Rch positive electrode switching integration capacitor. Input to the differential operation amplifier.
20	FBR+	Feedback terminal of Rch positive electrode switching integration capacitor.
21	VSSAR	Rch power supply (0V).
22	FBR−	Feedback terminal of Rch negative electrode switching integration capacitor.
23	INTR−	Output from Rch negative switching integration capacitor. Input to the differential operation amplifier.
24	VRCR	Rch high-impedance reference voltage input. Normally VDDAR/2.
25	VDACR	Rch DAC reference power supply. Normally connected to VSS.
26	VROR	Rch reference voltage output. Normally VDDAR/2.
27	VDDATR	Rch analog timing power supply (5V).
28	VSSAT	L/R analog power supply (5V).
29	VDDATL	Lch analog timing power supply (5V).
30	IRR	Reference current generation circuit 24 kohms bias resistor connection terminal.
31	VRCL	Lch reference voltage output. Normally VDDAL/2.
32	VDACL	Lch DAC reference power supply. Normally connected to VSS.
33	VRCL	Lch input and bias current generation circuit high-impedance reference voltage. Normally VDDAL/2.
34	INTL−	Output from Lch negative electrode switching integration capacitor. Input to differential operation amplifier.
35	FBL−	Feedback terminal of Lch negative electrode switching integration capacitor.
36	VSSAL	Lch power supply (0V).
37	FBL+	Feedback terminal of Lch positive electrode switching integration capacitor.
38	INTL+	Output from Lch positive electrode switching integration capacitor. Input to differential operation amplifier.
39	VDDAL	Lch analog power supply (5V).
40	DSLO	Lch digital mute operation state. "H" during digital mute.
41	DSRO	Rch digital mute operation state. "H" during digital mute.
42	TEST7	Test 7 : Open this terminal.
43	XSYS2	1/2 clock output of master clock frequency.
44	TEST8	Test 8 : Open this terminal.

■ IC1201 (PDB030A) : MODE CONTROLLER

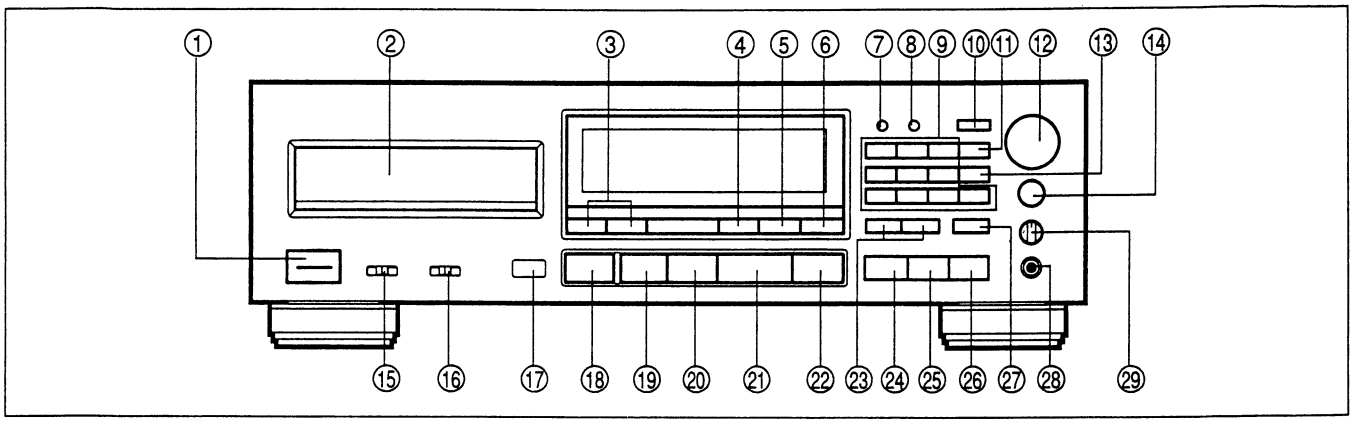
• Pin Function

No.	I/O	Pin Name	Description
1		VDD	Positive power supply terminal. Inputs +5V.
2	I	KSO	Key scan input terminal 0.
3	I	KS1	Key scan input terminal 1.
4	I	KS2	Key scan input terminal 2.
5	I	KS3	Key scan input terminal 3.
6	O	NC	Not used
7	O	NC	Not used
8	O	ALL	FL tube constant lighting segment output.
9	O	T8	FL tube lighting grid output
10	O	T7	FL tube lighting grid output
11	O	T6	FL tube lighting grid output
12	O	T5	FL tube lighting grid output
13	O	T4	FL tube lighting grid output
14	O	T3	FL tube lighting grid output
15	O	T2	FL tube lighting grid output
16	O	T1	FL tube lighting grid output
17	O	T0	FL tube lighting grid output
18		VPP	FL tube display power supply terminal. Supplies −30V.
19	O	S0	FL tube lighting segment output
20	O	S1	FL tube lighting segment output
21	O	S2	FL tube lighting segment output
22	O	S3	FL tube lighting segment output
23	O	S4	FL tube lighting segment output
24	O	S5	FL tube lighting segment output
25	O	S6	FL tube lighting segment output
26	O	S7	FL tube lighting segment output
27	O	S8	FL tube lighting segment output
28	O	S9	FL tube lighting segment output
29	O	S10	FL tube lighting segment output

No.	I/O	Pin Name	Description
30	O	S11	FL tube lighting segment output
31	O	S12	FL tube lighting segment output
32	O	S13	FL tube lighting segment output
33	O	S14	FL tube lighting segment output
34	O	S15	FL tube lighting segment output
35	O	NC	Not used
36	O	NC	Not used
37	O	NC	Not used
38	O	NC	Not used
39	O	NC	Not used
40	O	CCK	Clock output terminal for communications with the system control.
41	I	CDATAO	Serial data input terminal for communications with the system control.
42	O	CDATAI	Serial data output terminal for communications with the system control.
43	I/O	XRESET	System reset terminal. "L" level active.
44	I	XOPREQ	Input communication request from the system control. Communication start is triggered by the trailing edge from "H" to "L".
45	I	XRMSIG	Remote control signal input terminal.
46	I	LVDATA	Level data (serial data) from meter IC "PD2020".
47	I	LP	LP switch detection input. "H" level active. LP switch is pressed if "H" and is not pressed if "L".
48	I	RFGS	Reel FG-S (supply side) input terminal.
49	I	RFGT	Reel FG-T (take-up side) input terminal.
50	O	NC	Not used
51	O	NC	Not used
52	O	NC	Not used
53	O	XRD	Outputs the trigger for reading the level data from meter IC "PD2020".

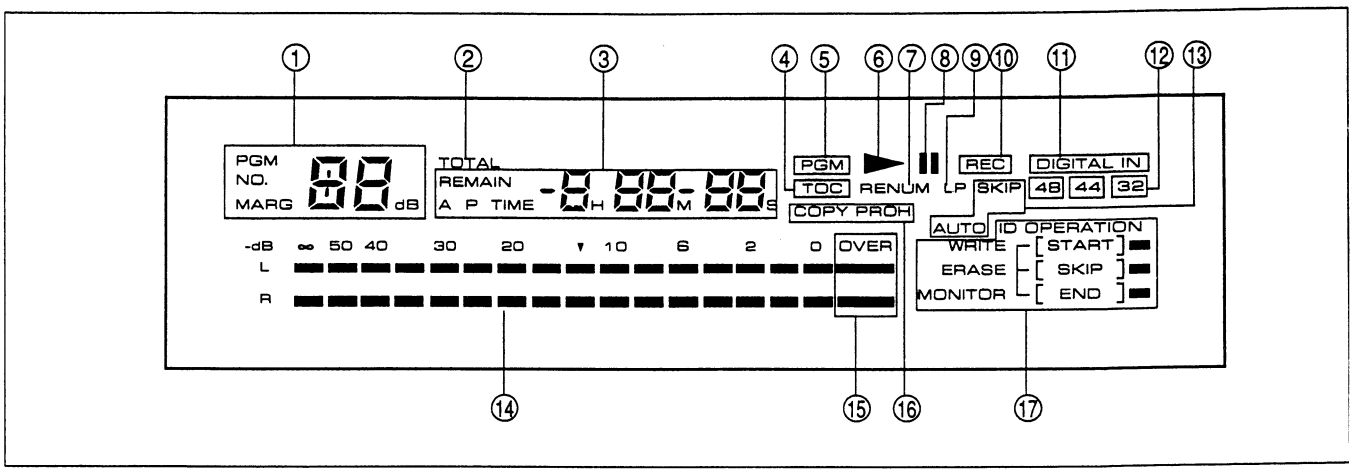
No.	I/O	Pin Name	Description
54	O	LR	PD2020 data Lch/Rch select. "L" level for Lch. "H" level for Rch.
55	O	LVCK	Clock output for serial communications with PD2020.
56	I	XTPLY	Timer play switch detection input. "L" level active. Timer play is switched on if "L" and off if "H".
57	I	XTREC	Timer recording switch detection input. "L" level active. Timer recording is switched on if "L" and off if "H".
58	I	COAX	Digital input source select switch detection input. "H" for coaxial-in and "L" for optical-in.
59	I	XANAL	Analog input switch detection input. "L" level active. "L" for analog-in and "H" for digital-in.
60			Not used. Connected to GND.
61		NC	Not used.
62		VSS	GND terminal. Connected to GND.
63		OSC2	System clock oscillation crystal/ceramic resonator connection terminal.
64		OSC1	System clock oscillation crystal/ceramic resonator connection terminal.

12. PANEL FACILITIES



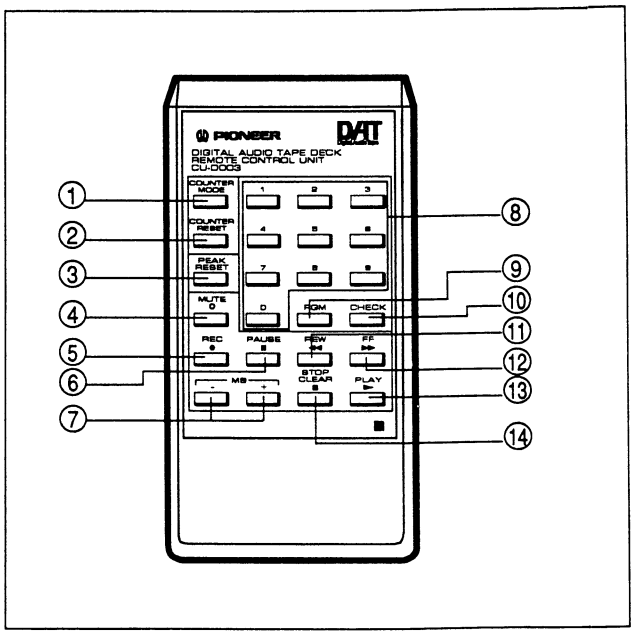
Front panel

① **POWER (▮ OFF/▁ ON) switch**
Operation of the unit becomes possible approximately 4 seconds after the power is turned on.
② **Cassette tray**
③ **COUNTER MODE, RESET buttons**
④ **ID MODE button**
⑤ **ENTER button**
⑥ **RENUMBER-TOC button**
⑦ **DISPLAY OFF button**
Press to turn off the display. The display circuit which may interfere the sound quality does not function. To turn the display back on, press this button again.
⑧ **PEAK RESET button**
⑨ **Number buttons (0-9)**
⑩ **REC MODE (▮ SP/▁ LP) button**
⑪ **PGM (Program) button**
⑫ **INPUT LEVEL control**
⑬ **CHECK button**
⑭ **INPUT BALANCE control**
⑮ **TIMER REC/PLAY, REPEAT switch**
Be sure to set this switch to OFF when not using the timer function.
⑯ **INPUT SELECTOR switch**
⑰ **Remote sensor window**
⑱ **OPEN/CLOSE button (⏏)**
⑲ **REW/REVIEW (Rewind/Review) button (◄◄)**
⑳ **STOP/CLEAR button (■)**
㉑ **PLAY button (►)**
㉒ **FF/CUE (Fast Forward/Cue) button (►►)**
㉓ **Skip buttons (MS +/–)**
㉔ **REC button (●)**
㉕ **PAUSE button (II)**
㉖ **MUTE button (O)**
㉗ **AUTO ID/SKIP PLAY button**
㉘ **PHONES jack**
㉙ **Headphone level adjustment control (PHONES LEVEL)**



Display

① **Tune number/peak margin display**
② **TOTAL indicator**
③ **Counter indicators**
In the long play (LP) mode, absolute time (A-TIME), remaining play time (REMAIN) and total play time (TOTAL) are displayed, based on those in the standard mode. To obtain the actual time, double each value.
④ **TOC indicator**
⑤ **PGM indicator**
⑥ **Play (►) indicator**
⑦ **RENUM (renumber) indicator**
⑧ **Pause (II) indicator**
⑨ **LP indicator**
⑩ **REC indicator**
⑪ **DIGITAL IN indicator**
⑫ **Sampling frequency indicator**
⑬ **AUTO ID/SKIP indicator**
⑭ **Digital-drive level meter**
⑮ **OVER level indicator**
⑯ **COPY PROH indicator**
⑰ **ID OPERATION indicators**



Remote Control Unit

Remote control buttons with the same names as buttons on the main unit have the same function as the corresponding buttons.

① **COUNTER MODE button**
② **COUNTER RESET button**
③ **PEAK RESET button**
④ **MUTE button (O)**
⑤ **REC button (●)**
⑥ **PAUSE button (II)**
⑦ **Skip buttons (MS +/–)**
⑧ **Number buttons (0-9)**
⑨ **PGM (Program) button**
⑩ **CHECK button**
⑪ **REW (Rewind) button (◄◄)**
⑫ **FF (Fast Forward) button (►►)**
⑬ **PLAY button (►)**
⑭ **STOP/CLEAR button (■)**

13. SPECIFICATIONS

Type ..... Rotating head digital audio tape recorder
Tape speed ..... 8.15 mm/sec (SP), 4.075 mm/sec (LP)
Recording time ..... SP: 120 minutes max.
LP: 240 minutes max.
Number of channels ..... 2 channels, stereo
Number of quantization bits ..... 16 bits, linear
12 bits, nonlinear
Sampling frequencies ..... 48kHz (recording, playback)
(Provided SCMS) 44.1kHz (digital recording only, playback)
32kHz (SP: digital recording only, playback)
32kHz (LP: recording, playback)
Error correction method ..... Double encoded,
Reed-Solomon code
Modulation system ..... 8-10 conversion
Emphasis ..... Recording: Fixed at OFF
Playback: Switched automatically
Head ..... AT-construction Sendust head
Recording/playback frequency response ..... SP: 2 Hz - 22 kHz
(± 0.5 dB)
LP: 2 Hz - 14.5 kHz (±0.5 dB)
Signal-to-Noise ratio ..... 90 dB or greater
Dynamic range ..... 90 dB or greater
Total harmonic distortion ..... 0.0045% or less (1 kHz)
Wow and flutter ..... Below measurable limit
(± 0.001% W.PEAK)

■ Analog Input/Output Terminals

Line input jacks ..... RCA PIN; reference input level 500mV
(input impedance 60 kΩ)
Line output jacks ..... RCA PIN; reference output level 500mV
(output impedance 900 Ω)
Headphone output jack ..... Stereo standard jack,
6 mm diameter
(1.4mW volume max., load impedance 8 Ω)

■ Digital Input/Output Terminals

Coaxial input terminal ..... RCA PIN; 0.5 Vp-p
(input impedance 75 Ω)
Coaxial output terminal ..... RCA PIN; 0.5 Vp-p
(output impedance 75 Ω)
Optical input terminal ..... x 1
Optical output terminal ..... x 1

■ Provided Functions

- Intelligent high-speed search
- Program tune selection
- Skip tune selection and music search
- Direct tune selection
- Skip play
- Music repeat
- Random play
- Remaining amount display (automatic tape thickness calculation type)
- Cue/Review (Fine Cue/Fine Review)
- Automatic rewind
- One point memory
- Timer recording/playback
- Seven-mode counter
- Display OFF function
- SP/LP mode selection
- Digital peak margin display
- REC MUTE (automatic space creation)
- Time data recording
- Auto ID recording
- Renumbering with TOC recording
- End Mark recording, end search operation
- Wireless remote control unit

■ Power Supply and Other Specifications

Power source ..... AC 220 - 230 V, 50/60Hz
Power consumption ..... 25 W
Dimensions ..... 420 (W) x 133.5 (H) x 316.5 (D) mm
Weight ..... 5.4 kg

■ Accessories

Wireless remote control unit 1
Remote control unit batteries (IEC R03) 2
Connection cords (RCA pin-plug, stereo) 2
Operating instructions 1
Warranty card 1

NOTE:
The specifications and design of this product are subject to change without notice, due to improvement.